50-219

GPU NUCLEAR

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A.W. Dromerick-USNRC
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| PLEASE NOTE THESE PROCEDURES ARE NUMBERED ONLY AS EMG PROCEDURES: | |
| 2000-EMG-3200.01A ENTIRE REV. 9 | 2000-EMG-3200.01A ENTIRE REV. 8 |
| 2000-EMG-3200.01B ENTIRE REV. 9 | 2000-EMG-3200.01B ENTIRE REV. 8 |
| 2000-EMG-3200.02 ENTIRE REV. 15 | 2000-EMG-3200.02 ENTIRE REV. 14 |
| 2000-EMG-3200.10 ENTIRE REV. 8 | 2000-EMG-3200.10 ENTIRE REV. 7 |
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| GPU NUCLEAR | OYSTER CREEK NUCLEAR GENERATING STATION PROCEDURE | Number EMG-3200.01A |
|---|---|---|
| Title **RPV CONTROL - NO ATWS** | | Revision No. 9 |
| Applicability/Scope **EMERGENCY OPERATING PROCEDURE FOR OYSTER CREEK** | | Responsible Office **SYSTEMS ENG. (EIC) E150** |
| This document is within QA plan scope X Yes___No<br>Safety Reviews Required X Yes___No | | Effective Date (04/25/00) 05/05/00 |

Prior Revision 8 incorporated the following Temporary Changes:

N/A

This Revision 9 incorporates the following Temporary Changes:

N/A

**LIST OF PAGES (all pages rev'd to Rev. 9)**



OYSTER CREEK
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| | Signature | Concurring Organization Element | Date |
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1.0 PURPOSE

The purpose of the RPV Control - No ATWS Procedure is to:

- Maintain adequate core cooling
- Cooldown the RPV to cold shutdown conditions

2.0 REFERENCES

2.1 Procedures

- 107.4, EOP Program Control
- 308, Emergency Core Cooling System Operation

2.2 Drawings

- BR 2002, Main, Extraction & Aux Steam System
- BR 3029, DC Control Elem Diagram
- BR E1102, Emer Condenser Isol Outlet Valve V-14-35
- BR E1183, Elem Diagram for Cleanup Isolation Valve V-16-2
- BR E1184, Elem Diagram for Cleanup Isolation Valve V-16-14
- GE 112C2248, Sht 2, Connection Diagram 11F
- GE 148F262, P&ID - Emergency Condenser System
- GE 148F444, P&ID - Cleanup Demineralizer System
- GE 157B6350, Sht 153, Cleanup System AC Isol Valve Elem Diagram
- GE 237E566, Sht 4 Rx Protection System Elem Diagram

2.3 2000-GLN-3200.01, OC Plant Specific Technical Guidelines

2.4 2000-STD-1218.04, EOP Writer's Guide

3.0 PRECAUTIONS AND LIMITATIONS

3.1 This procedure gives guidance to the operator for bypassing isolation signals scrams which is a departure from the Oyster Creek Technical Specifications. It is permissible to take actions which depart from the plant's Technical Specifications during emergency conditions as authorized by 10 CFR 50.54(x).

4.0 ATTACHMENTS

4.1 Attachment A - RPV Control - No ATWS EOP Flowchart
DWG: GU 3E-200-08-008 Sh 1

4.2 Attachment B - Support Procedure 1, Confirmation of Automatic Initiations and Isolations

4.3 Attachment C - Support Procedure 2, Feed and Condensate System Operation

4.4 Attachment D - Support Procedure 3, CRD System Operation

4.5 Attachment E - Support Procedure 4, Operation of the Core Spray System

4.6 Attachment F - Support Procedure 5, Fire Water for RPV Water Level Control

4.7 Attachment G - Support Procedure 6, Condensate Transfer for RPV Water Level Control

4.8 Attachment H - Support Procedure 7, Liquid Poison for RPV Water Level Control

4.9 Attachment I - Support Procedure 8, Lineup for Condensate System Injection

4.10 Attachment J - Support Procedure 9, Lineup for Core Spray System Injection

4.11 Attachment K - Support Procedure 10, Stopping Injection from the Core Spray System

4.12 Attachment L - Support Procedure 11, Alternate Pressure Control - Isolation Condensers

4.13 Attachment M - Support Procedure 12, Alternate Pressure Control - EMRVs

4.14 Attachment N - Support Procedure 13, Alternate Pressure Control - Clean-up in Recirculation Mode

4.15 Attachment O - Support Procedure 14, Alternate Pressure Control - Clean-up in Letdown Mode

4.16 Attachment P - Support Procedure 15, Alternate Pressure Control - Isolation Condenser Tube Side Vents

ATTACHMENT A

Attachment A to EMG-3200.01A, RPV Control - NO ATWS, is the RPV Control - NO ATWS EOP Flowchart,

DWG: GU 3E-200-08-008, Sht 1, Rev. 3.

# SUPPORT PROCEDURE 1

CONFIRMATION OF AUTOMATIC INITIATIONS AND ISOLATIONS

1.0 PREREQUISITES

Confirmation of automatic initiations and isolations has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

Confirm the following isolations/starts not required to by bypassed by the Emergency Operating Procedures:

<table>
<tr><th>SYSTEM</th><th>OPERATING DETAILS</th></tr>
<tr><td>Reactor Isolation</td><td>
<u>IF</u> Any of the following conditions exist:<br>
• RPV water level at or below 86 in.<br>
• Steam tunnel temperature at or above 180°F<br>
• Any steam line flow at or above 4.0x10$^6$ lbm/hr<br>
• Reactor mode switch in RUN and RPV pressure at or below 850 psig<br>
• Main steam line radiation at or above 800 units<br>
<u>AND</u><br>
no ATWS condition exists<br><br>
<u>THEN</u> Confirm closed the following:<br><br>
<table>
<tr><th>MSIVs</th><th>IC VENTS</th><th>RX SAMPLE</th></tr>
<tr><td>____NS03A</td><td>____V-14-1,-19</td><td>_____V-24-30 (11F)</td></tr>
<tr><td>____NS04A</td><td>____V-14-5,-20</td><td>_____V-24-29 (11F)</td></tr>
<tr><td>____NS03B</td><td></td><td>DW AIR SUPPLY</td></tr>
<tr><td>____NS04B</td><td></td><td>_____V-6-395 (11F)</td></tr>
</table>
</td></tr>
<tr><td>Scram Discharge Volume Isolation</td><td>
<u>IF</u> A Reactor Scram is initiated<br>
<u>AND</u><br>
SDV HI-HI LVL SCRAM switch is <u>not</u> in BYPASS,<br><br>
<u>THEN</u> Confirm closed the following:<br><br>
NORTH SDV Vents & Drains _____<br>
SOUTH SDV Vents & Drains _____
</td></tr>
</table>

| SYSTEM | OPERATING DETAILS |
|---|---|
| IC-A Isolation | **IF** IC-A is ruptured,<br><br>**THEN** Confirm closed the following:<br><br>IC ISOLATION VALVES: ____V-14-30 ____V-14-34 ____V-14-31 ____V-14-36<br>IC VENTS: ____V-14-5 ____V-14-20 |
| IC-B Isolation | **IF** IC-B is ruptured,<br><br>**THEN** Confirm closed the following:<br><br>IC ISOLATION VALVES: ____V-14-32 ____V-14-35 ____V-14-33 ____V-14-37<br>IC VENTS: ____V-14-1 ____V-14-19 |
| Cleanup System Isolation | **IF** Any of the following conditions exist:<br>• RPV water level at or below **86 in.**<br>• Drywell pressure at or above **3.0 psig**<br>• RWCU HELB Alarms<br><br>**THEN** Confirm closed the following Cleanup Isolation valves:<br><br>____V-16-1 ____V-16-14<br>____V-16-2 ____V-16-61 |
| Shutdown Cooling System Isolation | **IF** Any of the following conditions exist:<br>• RPV water level at or below **86 in.**<br>• Drywell pressure at or above **3.0 psig**<br><br>**THEN** Confirm closed the following SDC Isolation Valves:<br><br>____V-17-54 ____V-17-19 |
| Isolation Condenser Initiation | **IF** RPV water level is at or below **86 in.**,<br><br>**THEN** confirm initiation of both Isolation Condensers. |
| Core Spray System Start | **IF** Any of the following conditions exist:<br>• RPV water level at or below **86 in.**<br>• Drywell pressure at or above **3.0 psig**<br><br>**THEN** Confirm start of one Main Pump and one Booster Pump in each Core Spray System. |

| SYSTEM | OPERATING DETAILS |
|---|---|
| Primary Containment Isolation | **IF** Any of the following conditions exist:<br>• RPV water level at or below **86 in.**<br>• Drywell pressure at or above **3.0 psig**<br><br>**THEN** Confirm closed the following valves that are not required to be open by the Emergency Operating Procedures: |

| System | Valve No. | | |
|---|---|---|---|
| DW Vent/Purge | V-27-1 | (Panel 11F) | _____ |
| | V-27-2 | " | _____ |
| | V-27-3 | " | _____ |
| | V-27-4 | " | _____ |
| Torus Vent | V-28-17 | (Panel 11F) | _____ |
| | V-28-18 | " | |
| Torus 2" Vent Bypass | V-28-47 | (Panel 11F) | _____ |
| DWEDT | V-22-1 | (Panel 11F) | _____ |
| | V-22-2 | " | _____ |
| DW Floor Sump | V-22-28 | (Panel 11F) | _____ |
| | V-22-29 | " | _____ |
| Torus/Rx Bldg. Vacuum Breakers | V-26-16 | (Panel 11F) | |
| | V-26-18 | " | _____ |
| TIP Valves | Common Ind. | (Panel 11F) | _____ |
| DW 2" Vent Bypass | V-23-21 | (Panel 12XR) | _____ |
| | V-23-22 | " | _____ |
| $N_2$ Purge | V-23-13 | (Panel 12XR) | _____ |
| | V-23-14 | " | _____ |
| | V-23-15 | " | _____ |
| | V-23-16 | " | _____ |
| $N_2$ Makeup | V-23-17 | (Panel 12XR) | _____ |
| | V-23-18 | " | _____ |
| | V-23-19 | " | _____ |
| | V-23-20 | " | _____ |

# SUPPORT PROCEDURE 2

FEED AND CONDENSATE SYSTEM OPERATION

1.0 PREREQUISITES

Directed to maintain RPV level with the Feed and Condensate Systems by the Emergency Operating Procedures.

2.0 PREPARATIONS

None

3.0 PROCEDURE

3.1 IF RPV water level is increasing,

THEN select one Feedwater Pump to be the operating pump and trip the Feedwater Pumps NOT selected.

3.2 Control RPV water level using the following:

- Feedwater Regulating valves (Panel 5F/6F).
- MFRV Block Valves (Panel 5F/6F).
- Feedwater Low Flow valves (Panel 5F/6F).
- Heater Bank Outlet Isolation valves (Panel 5F/6F).
- Feedwater and Condensate pumps (Panel 5F/6F).

3.3 IF RPV water level cannot be maintained below 160 in.,

THEN close the Heater Bank Outlet Isolation valves for the operating pumps (Panel 5F/6F).

3.4 IF RPV water level reaches 170 in.,

THEN trip any operating Feedwater pump (Panel 5F/6F).

3.5 IF RPV water level reaches 170 in.

AND

RPV pressure is below 350 psig (the shutoff head of the Condensate pumps),

THEN close all Heater Bank Outlet Isolation valves (Panel 5F/6F).

3.6 IF RPV water level continues to increase,

THEN trip the operating Condensate Pumps (Panel 5F/6F).

# SUPPORT PROCEDURE 3

CRD SYSTEM OPERATION

1.0 PREREQUISITES

Directed to maintain RPV level with the CRD System by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

> NOTE
>
> There are three methods of injection using the CRD system:
>
> 1. Scram reset and controlling with the CRD Flow Control Valve (NC30).
> 2. Post scram injection (with the scram not reset) through the CRDs.
> 3. Post scram injection using bypass flow and controlling with the CRD Bypass Valve V-15-30.

3.1 Confirm running all available CRD Pumps (Panel 4F).

3.2

> CAUTION
>
> Operating one CRD pump at greater than 150 gpm may result in a pump trip.

IF the scram has been reset,

AND

CRD bypass flow is not required (based on flow rate required),

THEN control CRD flow using the in-service Flow Control Valve NC-30 (Panel 4F).

3.3 IF CRD bypass flow is required for RPV water level control,

THEN complete the following,

1. Confirm the scram reset.
2. IF the scram cannot be reset,

   THEN close CRD Charging Header Supply Valve V-15-52 (RB 23).
3. Open CRD Bypass Isolation Valve, V-15-237 (RB 23 SE)
4. Monitor flow on Flow Gage FI-225-2 (RB 23 SE),

   AND

   throttle open CRD Bypass Valve, V-15-30 (RB 23 SE), so as not to exceed 150 gpm flow for one or two pump operation.

3.4 IF RPV water level cannot be maintained below 160 in.,

THEN 1. Throttle closed CRD Bypass Valve, V-15-30 (RB 23 SE), if open.

2. Throttle closed CRD Flow Control Valve (Panel 4F).

3.5 IF RPV water level reaches 170 in.,

THEN trip the operating CRD pumps. (Panel 4F).

# SUPPORT PROCEDURE 4

OPERATION OF THE CORE SPRAY SYSTEM

1.0 PREREQUISITES

Use of the Core Spray System for RPV level control has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

> NOTE
>
> Manual control of the core spray system after auto initiation can only be accomplished after all initiating signals are overridden and the logic is reset.

2.1 IF Core Spray System actuating signals are present

THEN override the Core Spray initiation logic by depressing the OVERRIDE switches for all the sensors that are lit and depressing all ACTUATED switches, whether lit or unlit (Panel 1F/2F).

2.2 This procedure requires the use of an MB-1 and PA-235 key.

3.0 PROCEDURE

> CAUTION
>
> Core Spray suction strainer plugging may occur due to debris in the Primary Containment and result in a loss of Core Spray System Flow.

3.1

> CAUTION
>
> Diesel Generator overload will result if a Core Spray Main and Booster Pump are started with a Diesel Generator load of greater than 2000 KW.

IF Bus 1C or 1D are being supplied by an Emergency Diesel Generator,

THEN verify that adequate load margin is available so as NOT to exceed EDG load limit when starting Core Spray Pumps. _____

3.2

CAUTION

NPSH problems will develop on all operating pumps if more than 4 Containment Spray/Core Spray Main pumps are operated at the same time.

IF 4 Containment Spray/Core Spray Main pumps are in operation,

THEN secure Containment Spray pumps as necessary to run Core Spray pumps. _____

3.3 Confirm one Core Spray Main Pump is running in each system (Panel 1F/2F). _____

3.4 WHEN Core Spray Main Pump discharge pressure increases above 105 psig (Sys 1) or 140 psig (Sys 2) (Panel 1F/2F),

THEN confirm a Core Spray Booster Pump in each system is operating (Panel 1F/2F). _____

3.5 WHEN RPV pressure is less than 310 psig,

THEN restore and maintain RPV water level in a band directed by the GSS/GOS, by cycling the Core Spray Parallel Isolation Valves as required (Panel 1F/2F).

3.6 Observe the NPSH and Vortex limits of Figures A and B.

3.6.1 Maintain Core Spray Pump flow less than Figure B.

3.6.2 Maintain total Core Spray and Containment Spray flow less than Figure A.

3.7 IF all Core Spray pumps that are running are not required to assure adequate core cooling,

THEN 1. inform the GOS/GSS, _____

2. secure the Core Spray pumps that are not required to assure adequate core cooling. _____

3.8 IF no Core Spray pumps in a system are operating,

THEN verify Core Spray KEEP FILL TROUBLE (B-3-d) alarm is not illuminated.

3.9

| NOTE |
| --- |
| Core Spray System pumps will operate on minimum recirculation flow when the Parallel Isolation Valves are closed. |

IF the Core Spray pumps are operated for greater than 30 minutes on minimum recirculation flow,

AND

conditions permit,

THEN dispatch an operator to check the operating Core Spray pumps for excess vibration.

3.10

| NOTE |
| --- |
| The Test Flow Return Valves throttle in the open direction only. |

IF Core Spray Parallel Isolation Valves are required to be cycled to maintain RPV level for a time period in excess of two (2) hours,

THEN increase Core Spray System flow by completing the following:

1. Unlock and place the breaker for the Test Flow Return Valve in the ON position.

   - System 1 V-20-27 (MCC 1A21B/RB 23 E)
   - System 2 V-20-26 (MCC 1B21A/RB 23 NE)

2. Throttle open the Test Flow Return Valve and increase system flow to greater than 2000 gpm.

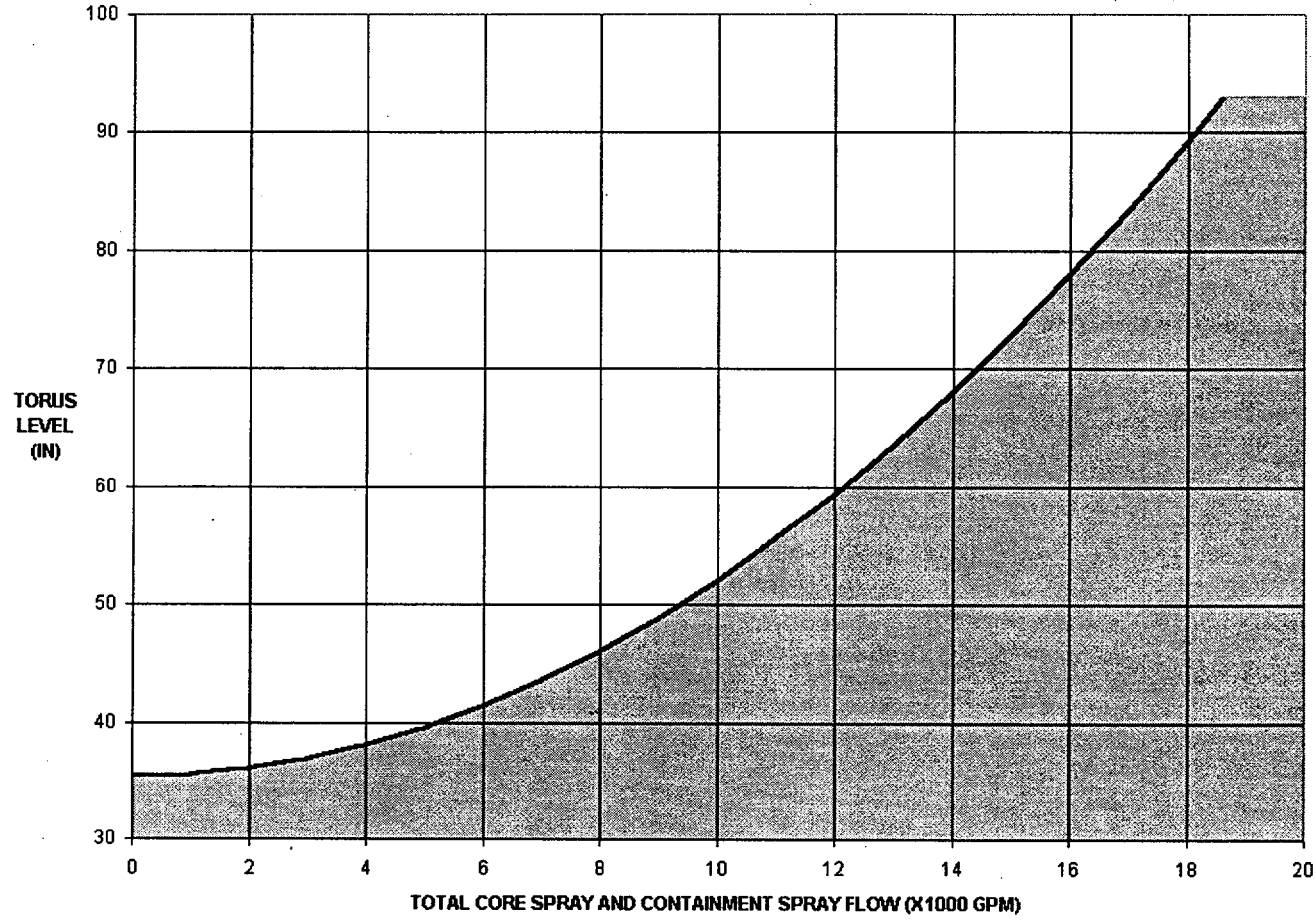
   - System 1 V-20-27 (Keylock RB 51 NW)
   - System 2 V-20-26 (Keylock RB 75 SW)

3. Throttle the Test Flow Return Valve as required to maintain total Core Spray Flow (per system) 2000 to 5000 gpm and RPV water level as directed by the GSS/GOS.

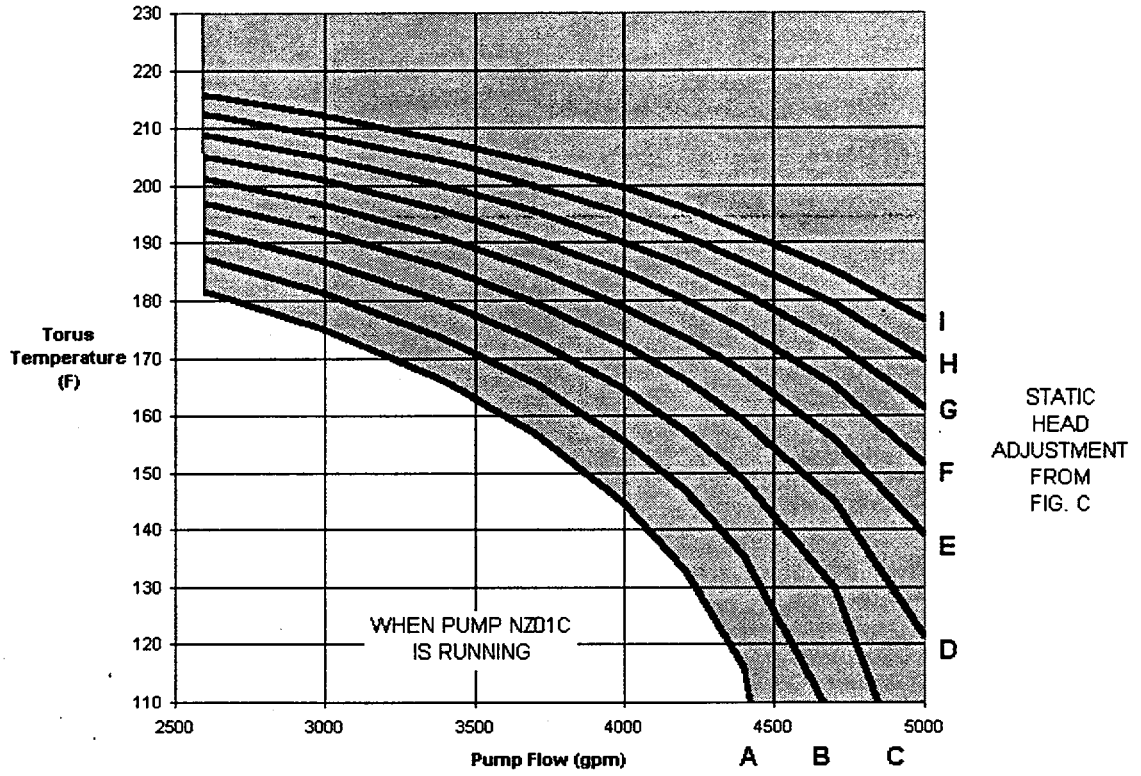
3.11 Continue to monitor Core Spray System operation and evaluate system performance in accordance with Steps 3.6 through 3.10.

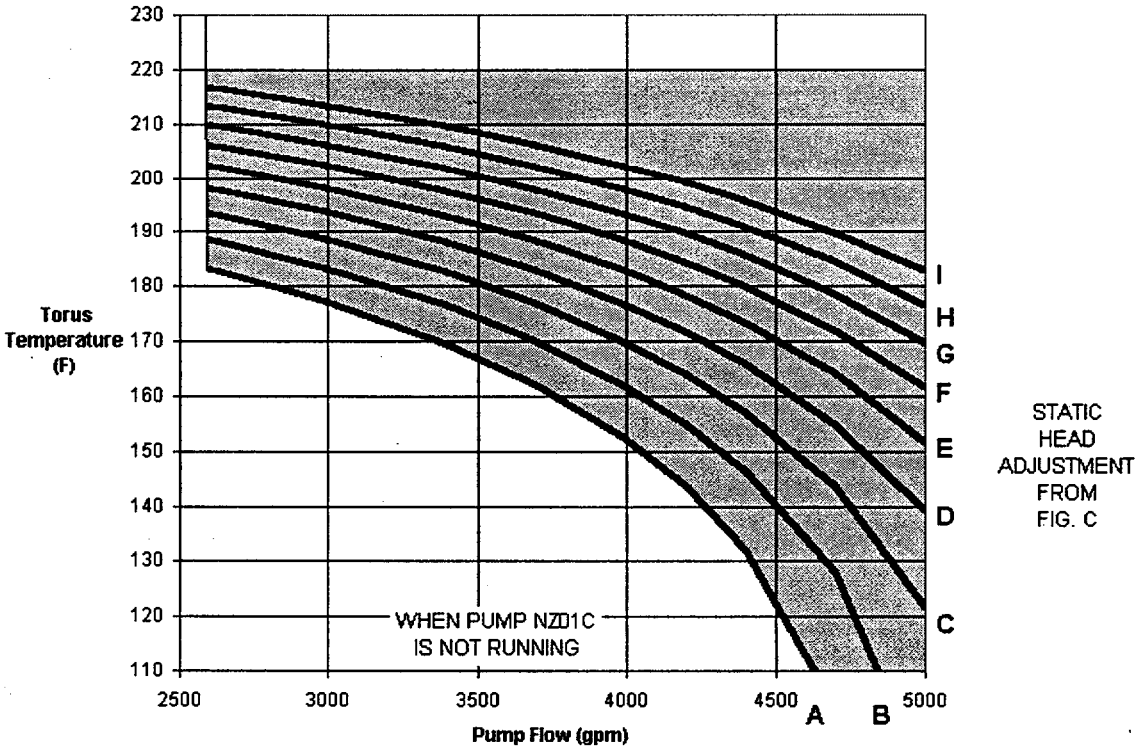
**FIGURE A**

**CORE SPRAY VORTEX LIMIT**

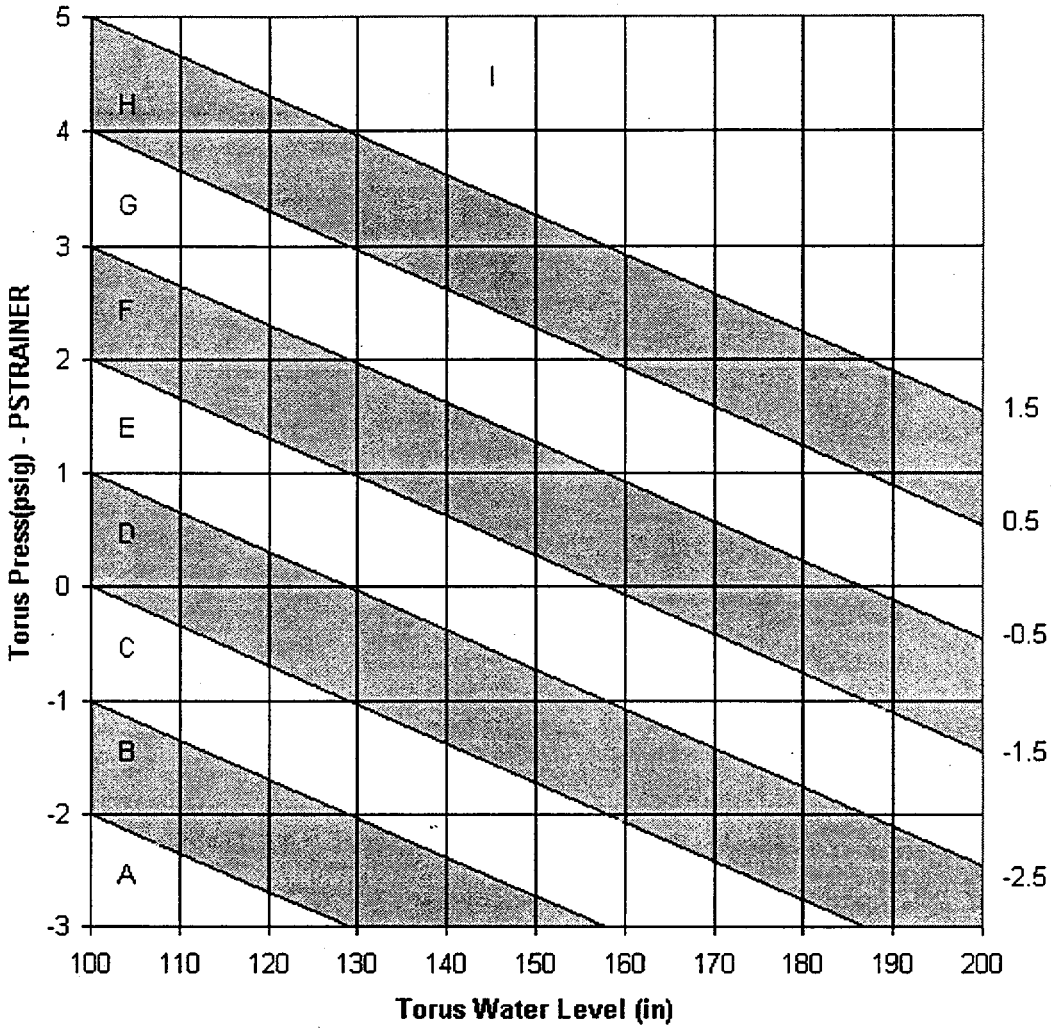


## FIGURE B
## CORE SPRAY NPSH LIMIT



## FIGURE C
## CORE AND CONTAINMENT SPRAY STATIC HEAD CURVE




PSTRAINER VALUE

| TOTAL (TORUS) FLOW (GPM) | PSTRAINER (PSL) |
|---|---|
| ≤ 5000 | 0.3 |
| 5000 - 7500 | 0.5 |
| 7500 - 10000 | 0.8 |
| 10000 - 12500 | 1.2 |
| 12500 - 15000 | 1.6 |
| 15000 - 17500 | 2.1 |
| 17500 - 18400 | 2.3 |
| 18400 - 20000 | 2.7 |

# SUPPORT PROCEDURE 5

FIRE WATER FOR RPV WATER LEVEL CONTROL

1.0 PREREQUISITES

RPV water level control using Fire Water via the Core Spray System has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

2.1 IF Core Spray actuating signals are present,

THEN override Core Spray initiation logic by depressing the OVERRIDE switches for all the sensors that are lit and depressing all ACTUATED switches, whether lit or unlit.

3.0 PROCEDURE

3.1

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 1 is designated to be used,

THEN inject fire water as follows:

3.1.1 Confirm stopped the Core Spray Main and Booster Pumps on Core Spray System 1 (Panel 1F/2F). _____

3.1.2 Place the Core Spray System 1 Main Pump control switches in the PULL-TO-LOCK position (Panel 1F/2F). _____

3.1.3 Close Tell-Tale Drain Valve, V-20-91 (RB 23 North or North Side RB outside). _____

3.1.4 Confirm running all Diesel Fire Pumps by placing their control switches in MAN position (Panel 13R). _____

3.1.5 Open Fire Water Supply Valve, V-20-83 (RB 23 North or North Side RB outside). _____

3.1.6 Confirm open Core Spray System 1 Discharge Valve, V-20-12 (Panel 1F/2F). _____

3.1.7 Confirm closed Core Spray System 1 Test Flow Return Valve, V-20-27 (Panel 1F/2F). _____

3.1.8 Close Core Spray System 1 Pump Suction Valves, V-20-32 and V-20-3 (Panel 1F/2F). _____

3.1.9 WHEN directed by the GSS/GOS
THEN open either Core Spray System 1 Parallel Isolation Valve, V-20-15 or V-20-40 (Panel 1F/2F). _____

3.2

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 2 is designated to be used,
THEN inject fire water as follows:

3.2.1 Confirm stopped the Core Spray Main and Booster Pumps in Core Spray System 2 (Panel 1F/2F). _____

3.2.2 Place the Core Spray System 2 Main Pump control switches in the PULL-TO-LOCK position (Panel 1F/2F). _____

3.2.3 Close Tell-Tale Drain Valve, V-20-90 (RB 23 South, or South Side RB outside). _____

3.2.4 Confirm running all Diesel Fire Pumps by placing their control switches in MAN position (Panel 13R). _____

3.2.5 Open Fire Water Supply Valve, V-20-82 (RB 23 South or South Side RB outside). _____

3.2.6 Confirm open Core Spray System 2 Discharge Valve, V-20-18 (Panel 1F/2F). _____

3.2.7 Confirm closed Core Spray System 2 Test Flow Return Valve, V-20-26, (Panel 1F/2F). _____

3.2.8 Close Core Spray System 2 Pump Suction Valves, V-20-33 and V-20-4 (Panel 1F/2F). _____

3.2.9 WHEN directed by the GSS/GOS

THEN open either Core Spray System 2 Parallel Isolation Valve, V-20-21 or V-20-41 (Panel 1F/2F). _____

# SUPPORT PROCEDURE 6

CONDENSATE TRANSFER FOR RPV WATER LEVEL CONTROL

1.0 PREREQUISITES

The use of the Condensate Transfer System via the Core Spray System for RPV water level control has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

2.1 This procedure requires the use of an MB-1 key and access to the Rx. Bldg.

2.2 IF Core Spray actuating signals are present,

THEN override Core Spray initiation logic by depressing the OVERRIDE switches for all the sensors that are lit and depressing all ACTUATED switches, whether lit or unlit.

3.0 PROCEDURE

3.1

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 1 pumps are not available,

AND

Fire Water to Core Spray System 1 is not in service,

THEN inject Condensate Transfer via the Core Spray System as follows:

3.1.1 Confirm stopped the Core Spray Main and Booster pumps in Core Spray System 1. _____

3.1.2 Place the Core Spray System 1 Main Pump control switches in PULL-TO-LOCK position. _____

3.1.3 Unlock and open Regulator Bypass Valves, V-11-110 and V-111 (RB 51 NW) _____

3.1.4 Confirm open Core Spray System 1 Discharge Valve, V-20-12 (Panel 1F/2F). _____

3.1.5 Confirm closed Core Spray System 1 Test Flow Return Valve, V-20-27 (Panel 1F/2F). _____

3.1.6 Start all available Condensate Transfer Pumps (Panel 5F/6F). _____

3.1.7 Close Core Spray System 1 Pump Suction Valves V-20-32 and V-20-3 (Panel 1F/2F). _____

3.1.8 WHEN directed by the GSS/GOS,

THEN open either Core Spray System 1 Parallel Isolation Valve, V-20-15 or V-20-40 (Panel 1F/2F). _____

3.2

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 2 pumps are not available,

AND

Fire Water to Core Spray System 2 is not in service,

THEN inject Condensate Transfer via the Core Spray System as follows:

3.2.1 Confirm stopped the Core Spray Main and Booster pumps in Core Spray System 2. _____

3.2.2 Place Core Spray System 2 Main Pump control switches in the PULL-TO-LOCK position. _____

3.2.3 Unlock and open Regulator Bypass Valves, V-11-109 and V-11-108 (RB 75 S). _____

3.2.4 Confirm open Core Spray System 2 Discharge Valve, V-20-18 (Panel 1F/2F). _____

_____

3.2.5 Confirm closed Core Spray System 2 Test Flow Return Valve, V-20-26 (Panel 1F/2F). _____

3.2.6 Start all available Condensate Transfer Pumps (Panel 5F/6F). _____

3.2.7 Close Core Spray System 2 Pump Suction Valves V-20-33 and V-20-4 (Panel 1F/2F). _____

3.2.8 WHEN directed by the GSS/GOS,
THEN open either Core Spray System 2 Parallel Isolation Valve, V-20-21 or V-20-41 (Panel 1F/2F). _____

# SUPPORT PROCEDURE 7

LIQUID POISON FOR RPV WATER LEVEL CONTROL

1.0 PREREQUISITES

RPV water level control using the Standby Liquid Control System has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

2.1 This procedure requires the use of an MB-1 key.

3.0 PROCEDURE

3.1 IF Rx building 95 Ft. elevation is accessible AND time permits,

THEN perform the following to lineup Demineralized Water for injection via the SLC System:

3.1.1 Unlock and close Standby Liquid Control Tank Outlet Valve V-19-4, (RB 95 West). _____

3.1.2 Unlock and open Test Tank Outlet Valve V-19-11, (RB 95 West). _____

3.1.3 Fill test tank by performing the following:

1. Open Demin Water Isolation Valve V-12-14 (RB 95 West). _____
2. Open Test Tank Demin Water Supply Valve V-19-12 (RB 95 West). _____

3.1.4 Inform the GSS/GOS that Demineralized Water has been lined up to the SLC System.

3.2

> CAUTION
>
> Due to pressure fluctuations, Fuel Zone Level Indictor Channels 'A; and 'C' will not provide accurate indication of RPV water level if a Standby Liquid Control Pump is injecting into the RPV and should not be used.

WHEN directed by the GSS/GOS,

THEN start SLC Pump A by placing the STANDBY LIQUID CONTROL Keylock in the FIRE SYS 1 position (Panel 4F). _____

3.3 IF Pump A does NOT start

OR

System 1 Squib Valve does NOT fire

THEN start SLC Pump B by placing the STANDBY LIQUID CONTROL Keylock in the FIRE SYS 2 position (Panel 4F).

3.4 Monitor system parameters for proper system performance.

3.5 IF Demineralized Water is being used for injection,

THEN throttle Test Tank Demin Water Supply Valve V-19-12 (RB 95 West) as required to maintain a constant level in the Test Tank.

# SUPPORT PROCEDURE 8

LINEUP FOR CONDENSATE SYSTEM INJECTION

1.0 PREREQUISITES

Confirmation of the lineup for Condensate System injection has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Confirm open: (on Panel 5F/6F)

| | | |
|---|---|---|
| • HEATER BANK INLET Valves | V-2-7 | _____ |
| | V-2-8 | _____ |
| | V-2-9 | _____ |
| • HEATER BANK OUTLET Valves | V-2-10 | _____ |
| | V-2-11 | _____ |
| | V-2-12 | _____ |
| • MFRV A BLOCK Valve | V-2-740 | _____ |
| • MFRV C BLOCK Valve | V-2-741 | _____ |

3.2 Confirm all available Condensate Pumps running.

A _____
B _____
C _____

3.3 Confirm 2 Condensate Demineralizers are in service for each operating Condensate Pump _____

3.4 Confirm all Feedwater Regulating Valve Controllers in MAN position.

| | |
|---|---|
| ID11A | _____ |
| ID11B | _____ |
| ID11C | _____ |

3.5 Confirm all Feedwater Regulating Valves open.

A _____
B _____
C _____

# SUPPORT PROCEDURE 9

LINEUP FOR CORE SPRAY SYSTEM INJECTION

1.0 PREREQUISITES

Confirmation of the lineup for Core Spray System injection has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

> CAUTION
>
> Core Spray suction strainer plugging may occur due to debris in the Primary Containment and result in a loss of Core Spray System Flow.

3.1 Confirm open Core Spray System 1 and 2 Pump Suction Valves (Panel 1F/2F).

V-20-32 _____
V-20-3 _____
V-20-33 _____
V-20-4 _____

3.2 Confirm closed Core Spray System 1 and 2 Test Flow Return Valves in each system (Panel 1F/2F).

V-20-27 _____
V-20-26 _____

3.3

> CAUTION
>
> NPSH problems will develop on all operating pumps if more than 4 Containment Spray/Core Spray Main pumps are operated at the same time.

IF 4 Containment Spray/Core Spray Main pumps are in operation,

THEN secure Containment Spray pumps as necessary to run Core Spray pumps. _____

3.4 Confirm one Core Spray System Main Pump operating in each system (Panel 1F/2F).

NZ01A _____
NZ01C _____
NZ01B _____
NZ01D _____

3.5 Confirm one Core Spray System Booster Pump operating in each system (Panel 1F/2F).

NZ03A _____
NZ03C _____
N5Z03B _____
NZ03D _____

3.6 Confirm open Core Spray System 1 and 2 Discharge Valves (Panel 1F/2F).

V-20-12 _____
V-20-18 _____

3.7 WHEN RPV pressure decreases to 310 psig,
THEN confirm open at least one Core Spray Parallel Isolation Valve in each System (Panel 1F/2F),

V-20-15 _____
V-20-40 _____
V-20-21 _____
V-20-41 _____

NOTE

Maximum Flow is achieved with one main pump and one booster pump running and both parallel isolation valves open in each system.

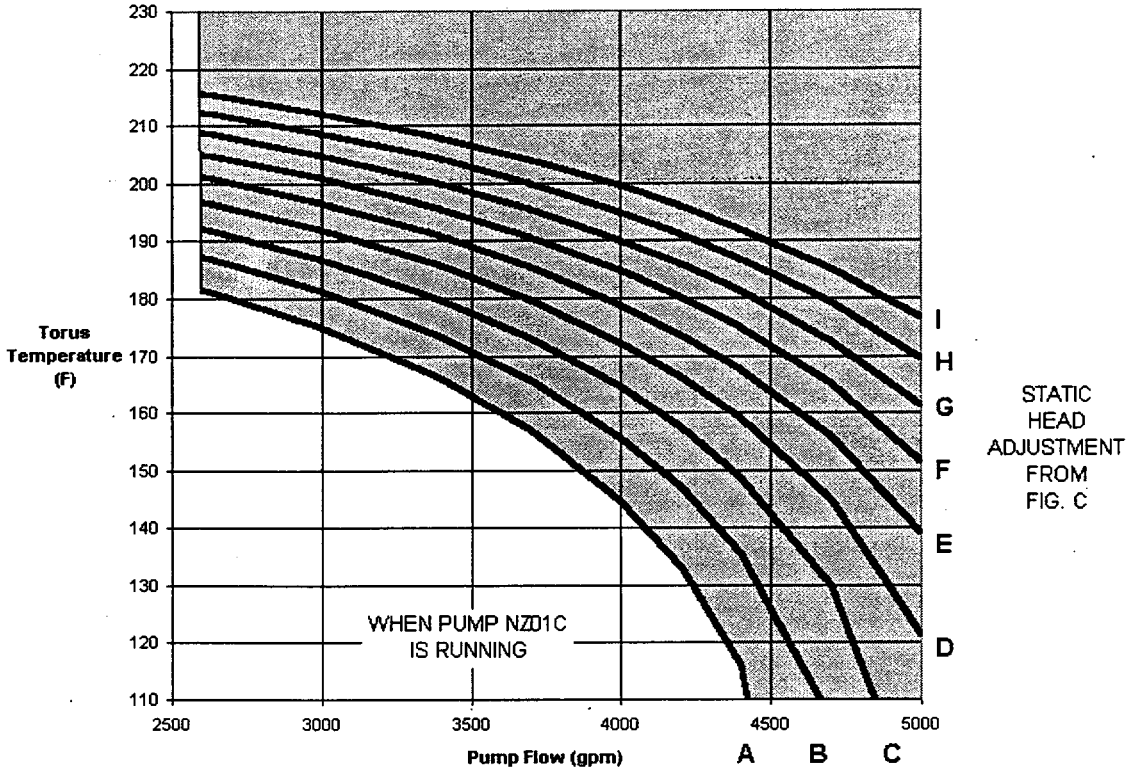
3.8 Maximize system flow irregardless of Vortex limits

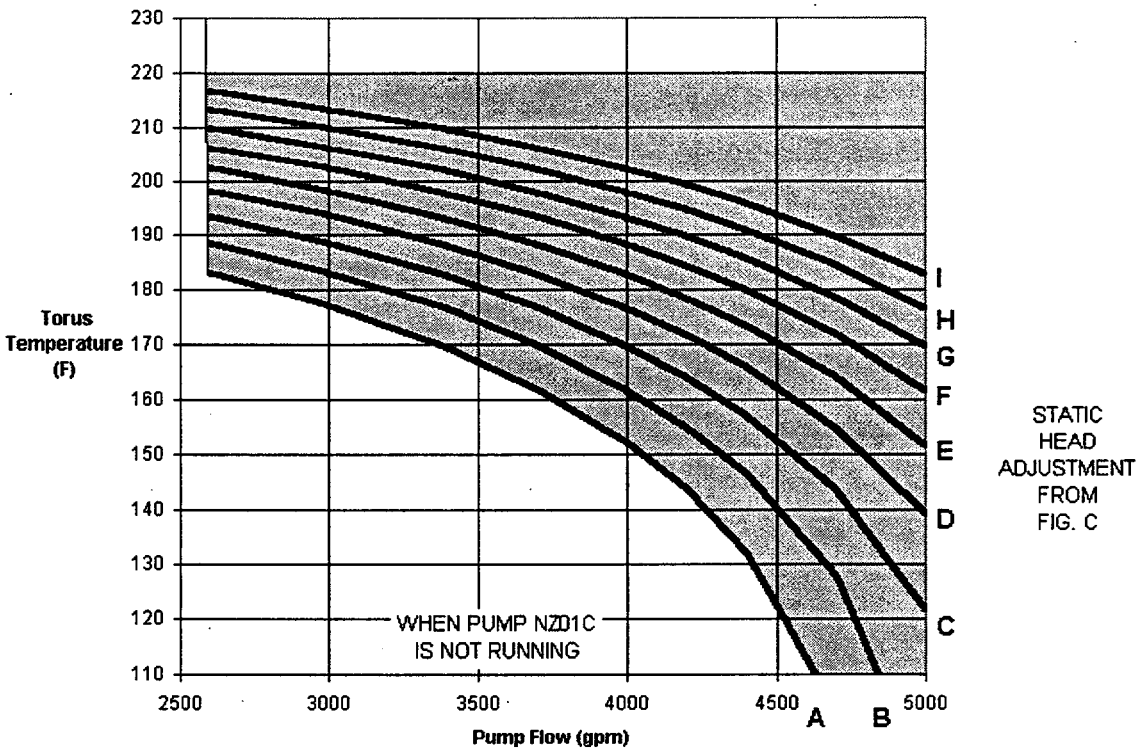
AND

Maintain Core Spray NPSH limits in accordance with Figure B.

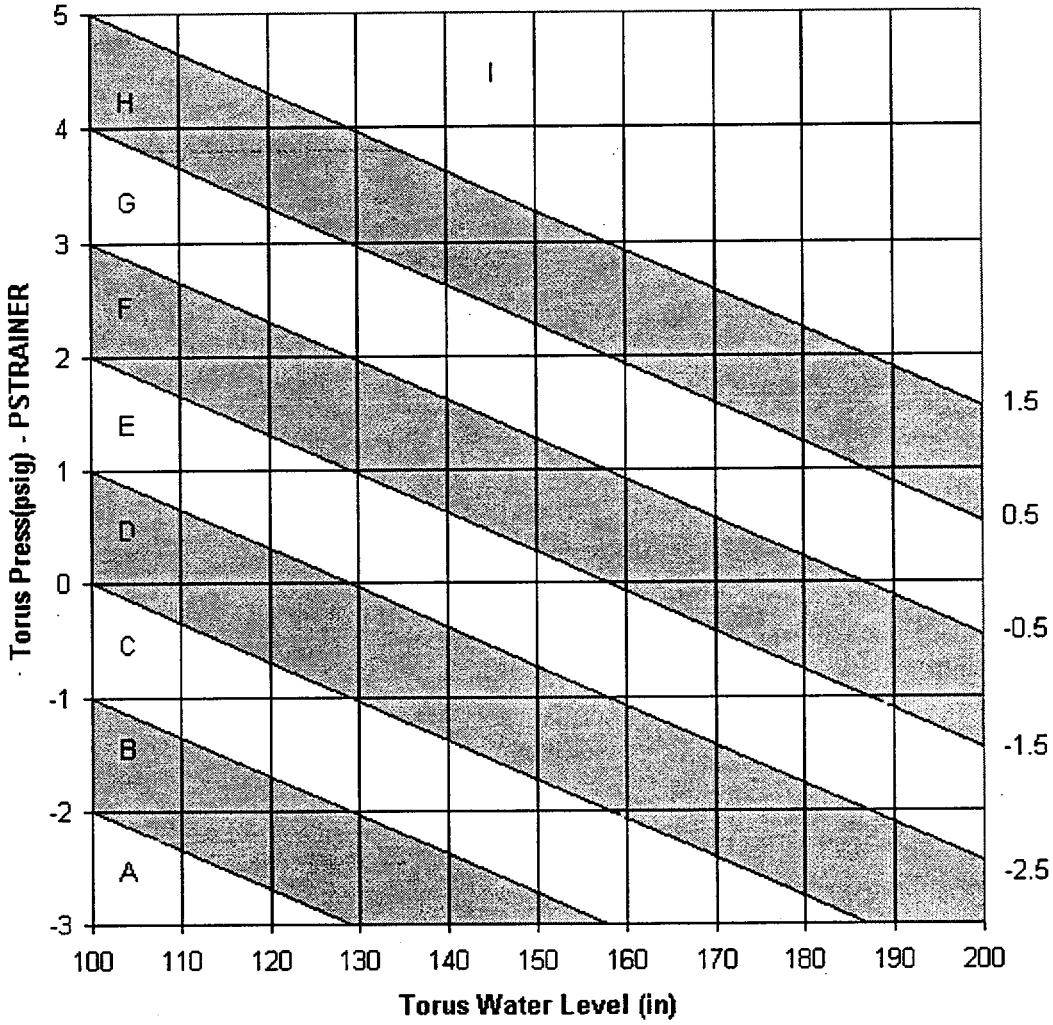
3.9 IF NPSH limits are reached,
THEN secure the booster pump in the system with NPSH limitation.

**FIGURE B**
**CORE SPRAY NPSH LIMIT**



## FIGURE C
## CORE AND CONTAINMENT SPRAY STATIC HEAD CURVE




PSTRAINER VALUE

| TOTAL (TORUS) FLOW (GPM) | PSTRAINER (PSL) |
|---|---|
| ≤ 5000 | 0.3 |
| 5000 - 7500 | 0.5 |
| 7500 - 10000 | 0.8 |
| 10000 - 12500 | 1.2 |
| 12500 - 15000 | 1.6 |
| 15000 - 17500 | 2.1 |
| 17500 - 18400 | 2.3 |
| 18400 - 20000 | 2.7 |

# SUPPORT PROCEDURE 10

STOPPING INJECTION FROM THE CORE SPRAY SYSTEM

1.0 PREREQUISITES

Stopping Core Spray injection has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

When directed by the GOS/GSS, perform the following:

3.1 Depress the OVERRIDE switches for all sensors that are lit (Panel 1F/2F). _____

3.2 Depress ALL ACTUATED switches whether lit or unlit (Panel 1F/2F). _____

3.3 Confirm closed Core Spray Parallel Isolation Valves NOT required to be open to assure adequate core cooling. _____

3.4 Secure Core Spray Booster Pumps NOT required to assure adequate core cooling by placing their respective control switch in STOP (Panel 1F/2F). _____

3.5 Secure Core Spray Main Pumps NOT required to assure adequate core cooling by placing their respective control switch in STOP (Panel 1F/2F). _____

3.6 Verify Core Spray KEEP FILL TROUBLE (B-3-d) alarm is NOT illuminated. _____

# SUPPORT PROCEDURE 11

ALTERNATE PRESSURE CONTROL SYSTEMS

ISOLATION CONDENSERS

1.0 PREREQUISITES

RPV pressure control using the Isolation Condensers has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Procedure for Isolation Condenser A

3.1.1 Confirm Recirculation Pump A tripped. _____

IF recirculation Pump A cannot be tripped from the Control Room,

THEN trip the recirculation Pump A Supply Breaker locally at 4160V Bus 1A.

3.1.2

| CAUTION |
| --- |
| If RPV water level exceeds 180 in., initiation of an isolation condenser can cause water hammer to occur. |

Verify RPV water level is below 160 in. _____

3.1.3 IF Isolation Condenser A has isolated on a high flow condition caused by Recirculation Pump operation,

THEN restore the IC to operation as follows:

1. Open Steam Supply valves V-14-30 & V-14-31 by placing their control switches in the OPEN position (Panel 1F/2F).

2. Open DC Condensate Return valve V-14-34 by placing its control switch in the OPEN position (Panel 1F/2F).
3. Open AC Condensate Return valve V-14-36 by placing its control switch in the OPEN position (Panel 1F/2F).
4. Reset the Isolation Condenser isolation signal using the Isolation Condenser Reset pushbutton (Panel 4F).
5. Restore all Isolation Condenser A valve control switches to their AUTO position.

3.1.4 Confirm open DC condensate return valve V-14-34 (Panel 1F/2F).

3.1.5 Control RPV pressure in specified band by cycling V-14-34.

3.1.6 Make up to IC shell to maintain IC level between 4.8 ft. and 7.7 ft. by cycling Isolation Condenser A Make-Up Valve V-11-36 (Panel 5F/6F).

3.2 Procedure For Isolation Condenser B

3.2.1 Confirm Recirculation Pump E tripped.

IF recirculation Pump E cannot be tripped from the Control Room,

THEN trip the recirculation Pump E supply breaker locally at 4160V Bus 1A.

3.2.2

| CAUTION |
| --- |
| If RPV water level exceeds 180 in., initiation of an isolation condenser can cause water hammer to occur. |

Verify RPV water level is below 160 in.

3.2.3 IF Isolation Condenser B has isolated on a high flow condition caused by Recirculation Pump operation,

THEN restore the IC to operation as follows:

1. Open Steam Supply valves V-14-32 & V-14-33 by placing their control switches in the OPEN position (Panel 1F/2F).
2. Open DC Condensate Return valve V-14-35 by placing its control switch in the OPEN position (Panel 1F/2F).
3. Open AC Condensate Return valve V-14-37 by placing its control switch in the OPEN position (Panel 1F/2F).

4. Reset the Isolation Condenser isolation signal using the Isolation Condenser Reset pushbutton (Panel 4F).
5. Restore all Isolation Condenser B valve control switches to their AUTO position.

3.2.4 Confirm open DC condensate return valve V-14-35 (Panel 1F/2F).

3.2.5 Control RPV pressure in specified band by cycling V-14-35.

3.2.6 Make up to IC shell to maintain IC level between 4.8 ft. and 7.7 ft. by cycling Isolation Condenser B Make-Up Valve V-11-34 (Panel 5F/6F).

# SUPPORT PROCEDURE 12

ALTERNATE PRESSURE CONTROL SYSTEMS

EMRVs

1.0 PREREQUISITES

RPV pressure control using the EMRVs has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Verify that Torus water level is above 90 in.

3.2 Place the selected EMRV control switch in the MAN position (Panel 1F/2F).

3.3 Control reactor pressure in the specified band by opening the EMRVs in the following sequence:

NR108A

NR108D

NR108B

NR108C

NR108E

3.4 Monitor Torus water temperature.

# SUPPORT PROCEDURE 13

ALTERNATE PRESSURE CONTROL SYSTEMS

CLEAN-UP IN RECIRCULATION MODE

1.0 PREREQUISITES

1.1 RPV pressure control using the Reactor Water Cleanup System in Recirculation Mode has been directed by the Emergency Operating Procedures.

1.2 No RWCU HELB exists.

2.0 PREPARATION

When directed by GSS/GOS, perform the following:

2.1 Confirm that a Cleanup System line break does not exist (Alarms D-1-d/D-2-d).

2.2 Open the EOP BYPASS PLUGS panel in the rear of Panel 3F.

2.2.1 Remove the bypass plug from position BP2 and insert into position BP1. _____

2.2.2 Remove the bypass plug from position BP4 and insert into position BP3. _____

2.2.3 Remove the bypass plug from position BP6 and insert into position BP5. _____

2.2.4 Remove the bypass plug from position BP8 and insert into position BP7. _____

2.3 Obtain a flat head screwdriver from the EOP Tool Box in the Control Room.

2.4 Open the front panel of Auxiliary Relay Panel ER-215-087 (A/B Battery Room). _____

2.4.1 Remove bypass plug 1 (upper left hand corner). _____

2.4.2 Remove bypass plug 2 (upper left hand corner). _____

3.0 PROCEDURE

When directed by the GSS/GOS, perform the following

3.1 Bypass and isolate Cleanup Filters as follows:

3.1.1 Open V-16-83, Filter Bypass Valve (RB 75). _____

3.1.2 Close Filter Outlet Valve ND28A or ND28B (RB 75). _____

3.2

> NOTE
>
> The remote valve operators to valves V-16-102, V-16-113, and V-16-114 have been disconnected.

Bypass and isolate the Cleanup Demineralizer:

3.2.1 Open Demineralizer Bypass Valve V-16-113 (RB 75 SW). _____

3.2.2 Close Demineralizer Outlet Valve V-16-114 (RB 75 SW). _____

3.2.3 Close Demineralizer Inlet Valve V-16-102 (RB 75 SW). _____

3.3 IF Cleanup System is not in service

THEN place the system in service in accordance with Procedure 303, Reactor Cleanup Demineralizer System.

3.4 Maximize RBCCW flow to the Non-Regenerative Heat Exchanger. Maximum flow allowed is 1750 gpm.

3.5 Maintain RPV pressure within desired band by throttling RBCCW flow to the NRHX.

# SUPPORT PROCEDURE 14

ALTERNATE PRESSURE CONTROL SYSTEMS

CLEAN-UP IN LETDOWN MODE

1.0 PREREQUISITES

1.1 RPV pressure control using the Reactor Water Cleanup System in Letdown Mode has been directed by the Emergency Operating Procedures.

1.2 Boron Injection is not required.

1.3 No RWCU HELB exists.

2.0 PREPARATIONS

None

3.0 PROCEDURE

3.1 Confirm that a Cleanup System line break does not exist (Alarms D-1-d/D-2-d).

3.2 IF Cleanup System is not in service,
THEN place the system in service in accordance with Procedure 303, Reactor Cleanup Demineralizer System. _____

3.3 Confirm closed the following valves:

- Discharge to Radwaste V-16-57 (Panel 3F). _____
- Discharge to Condenser V-16-60 (Panel 3F). _____
- Discharge Flow Controller FCV-ND-22 (Panel 3F). _____

3.4 Open Discharge to Condenser Valve V-16-60 (Panel 3F). _____

3.5 Commence Letdown Flow to the main condenser by throtting open Discharge Flow Controller FCV-ND-22 (Panel 3F). _____

3.6 Carefully monitor Cleanup System Flow and make necessary adjustments with System Flow Controller FCN-ND-16 (Panel 3F) to maintain proper differential pressures across demineralizer and filter elements. _____

3.7 Maintain NRHX outlet temperature below 130°F by either reducing Letdown Flow using FCV-ND-22 (Panel 3F) or increasing RBCCW Flow through the NRHX using valve V-5-122 (RB 51 SE). Maximum RBCCW Flow allowed is 1750 gpm. _____

3.8 Adjust letdown flow rate by throttling FCV-ND-22 to establish required cooldown rate or pressure band. _____

3.9 IF NRHX outlet temperature cannot be maintained less than 130°F

AND

the system trips,

THEN 1. Bypass and isolate the Cleanup Filter:

a. Open V-16-83, Filter Bypass Valve (RB 75). _____

b. Close Filter Outlet Valve ND28A or ND28B (RB 75). _____

2.

> NOTE
>
> The remote valve operators to valves V-16-102, V-16-113, and V-16-114 have been disconnected.

Bypass and isolate the Cleanup Demineralizer:

a. Open Demineralizer Bypass Valve V-16-113 (RB 75 SW). _____

b. Close Demineralizer Outlet Valve V-16-114 (RB 75 SW). _____

c. Close Demineralizer Inlet Valve V-16-102 (RB 75 SW). _____

3. Contact I & C Department to inhibit the NRHX outlet high temperature as follows:

a. At RK05 (75' Elev.), rotate the dial on TIS-1J33 counterclockwise until the maximum trip setting is obtained.

4. Return the Cleanup System to service in accordance with Procedure 303, Reactor Cleanup Demineralizer System. _____

5. Perform Steps 3.3 through 3.6 to establish letdown flow. _____

6. Adjust letdown flow rate by throttling FCV-ND-22 to establish required cooldown rate or pressure band. _____

# SUPPORT PROCEDURE 15

ALTERNATE PRESSURE CONTROL SYSTEMS

IC TUBE SIDE VENTS

1.0 PREREQUISITES

RPV pressure control using the Isolation Condenser Tube Side Vents has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following in preparation for using the IC Tube Side Vents for RPV pressure control.

2.1 Verify the following:

1. Isolation Condensers are not required to be isolated. _____
2. Main Condenser is intact. _____
3. Offsite radioactivity release rate is expected to remain below the release rate which requires an Unusual Event. _____

2.2 Confirm that the Isolation Condenser Vent Valve control switches for the Isolation Condensers to be used are in the normal mid-position (Panel 11F).

| | | |
|---|---|---|
| Isolation Condenser A | V-14-5 | |
| | V-14-20 | _____ |
| Isolation Condenser B | V-14-1 | |
| | V-14-19 | _____ |

2.3 Open the EOP BYPASS PLUGS panel inside of Panel 10XF.

2.3.1 Remove the bypass plug from position BP2 and insert it into position BP1. _____

2.3.2 Remove the bypass plug from position BP4 and insert it into position BP3. _____

3.0 PROCEDURE

3.1 Verify that RPV Water Level is below 180 in.

3.2 Confirm open the Isolation Condenser Steam Inlet Valves (1F/2F) for the Isolation Condensers to be used.

| | | |
|---|---|---|
| Isolation Condenser A | V-14-30 | _____ |
| | V-14-31 | _____ |
| Isolation Condenser B | V-14-32 | _____ |
| | V-14-33 | _____ |

3.3 Open the Isolation Condenser Tube Side Vents (Panel 11F) for the Isolation Condensers to be used.

| | | |
|---|---|---|
| Isolation Condenser A | V-14-5 | |
| | V-14-20 | _____ |
| Isolation Condenser B | V-14-1 | |
| | V-14-19 | _____ |

3.4 Control Reactor pressure in specified band by cycling the tube side vents designated in Step 3.3.

| GPU NUCLEAR | OYSTER CREEK NUCLEAR GENERATING STATION PROCEDURE | Number EMG-3200.01B |
|---|---|---|

Title

# RPV CONTROL - WITH ATWS

Revision No. 9

Applicability/Scope

**EMERGENCY OPERATING PROCEDURE FOR OYSTER CREEK**

Responsible Office **SYSTEMS ENGINEERING E150**

This document is within QA plan scope _X_ Yes ___ No
Safety Reviews Required _X_ Yes ___ No

Effective Date (04/25/00) 05/05/00

Prior Revision __8__ incorporated the following Temporary Changes:

N/A

This Revision __9__ incorporates the following Temporary Changes:

N/A

**LIST OF PAGES (all pgs. rev'd to Rev. 9)**

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| | | PLANT OPERATIONS DIRECTOR | 4-13-00 4-13 |
| Approved By | | DIRECTOR, OPERATIONS & MAINTENANCE | 4-24-00 |

1.0 PURPOSE

The purpose of the RPV Control - With ATWS Procedure is to:

- Maintain adequate core cooling
- Shutdown the reactor
- Cooldown the RPV to cold shutdown conditions

2.0 REFERENCES

2.1 Procedures

- 107.4, EOP Program Control
- 308, Emergency Core Cooling System Operation

2.2 Drawings

- BR 2002, Main, Extraction & Aux Steam System
- BR 2006, Flow Diagram Closed Cooling Water System
- BR 2011, Shts 1 & 2, Flow Diagram - H&V Reactor Bldg.
- BR 3029, DC Control Elem Diagram
- BR E1102, Emer Condenser Isol Outlet Valve V-14-35
- BR E1183, Elem Diagram for Cleanup Isolation Valve V-16-2
- BR E1184, Elem Diagram for Cleanup Isolation Valve V-16-14
- GE 112C2248, Sht 2, Connection Diagram 11F
- GE 112C2654, Sht 3, Panel 2R Connection Diagram
- GE 148F262, P&ID - Emergency Condenser System
- GE 148F444, P&ID - Cleanup Demineralizer System
- GE 157B6350, Shts 117, 118, 153, Cleanup System AC Isol Valve Elem Diagram
- GE 237E566, Shts 1a, 1b, 2, 4, & 5, Rx Protection System Elem Diagram
- NU 5060E6003, Shts 1 - 3, Core Spray/RBCCW Drywell Isolation Elem Diagram

2.3 2000-GLN-3200.01, OC Plant Specific Technical Guidelines

2.4 2000-STD-1218.04, EOP Writer's Guide

3.0 PRECAUTIONS AND LIMITATIONS

3.1 This procedure gives guidance to the operator for bypassing isolation signals and automatic scrams which is a departure from the Oyster Creek Technical Specifications. It is permissible to take actions which depart from the plant's Technical Specifications during emergency conditions as authorized by 10 CFR 50.54(x).

4.0 ATTACHMENTS

4.1 Attachment A - RPV Control - With ATWS EOP Flowchart DWG: GU 3E-200-08-009 Sht 1

4.2 Attachment B - Support Procedure 1, Confirmation of Automatic Initiations and Isolations

4.3 Attachment C - Support Procedure 16, Bypassing MSIV LO-LO Level Isolation Interlocks

4.4 Attachment D - Support Procedure 17, Termination and Prevention of Injection

4.5 Attachment E - Support Procedure 18, Bypassing RBCCW Isolation Interlocks

4.6 Attachment F - Support Procedure 19, Feedwater/Condensate and CRD System Operation

4.7 Attachment G - Support Procedure 20, Low Pressure Injection During an ATWS

4.8 Attachment H - Support Procedure 10, Stopping Injection from the Core Spray System

4.9 Attachment I - Support Procedure 11, Alternate Pressure Control Systems - Isolation Condensers

4.10 Attachment J - Support Procedure 12, Alternate Pressure Control Systems - EMRVs

4.11 Attachment K - Support Procedure 13, Alternate Pressure Control Systems- Clean-up in Recirculation Mode

4.12 Attachment L - Support Procedure 14, Alternate Pressure Control Systems - Clean-up in Letdown Mode

4.13 Attachment M - Support Procedure 15, Alternate Pressure Control Systems - I C Tube Side Vents

4.14 Attachment N - Support Procedure 21, Alternate Insertion of Control Rods

4.15 Attachment O - Support Procedure 22, Initiating the Liquid Poison System

4.16 Attachment P - Support Procedure 23, Alternate Boron Injection with the Clean-up System

4.17 Attachment Q - Support Procedure 24, Alternate Boron Injection with the Feed & Condensate System

ATTACHMENT A

Attachment A to EMG-3200.01B, RPV Control - With ATWS is the RPV Control - With ATWS EOP Flowchart,

DWG: GU 3E-200-08-009, Sht 1, Rev. 3.

# SUPPORT PROCEDURE 1

## CONFIRMATION OF AUTOMATIC INITIATIONS AND ISOLATIONS

1.0 PREREQUISITES

Confirmation of automatic initiations and isolations has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

Confirm the following isolations/starts not required to by bypassed by the Emergency Operating Procedures:

<table>
<tr><th>SYSTEM</th><th>OPERATING DETAILS</th></tr>
<tr><td>Reactor Isolation</td><td>IF Any of the following conditions exist:<br>• RPV water level at or below 86 in.<br>• Steam tunnel temperature at or above 180°F<br>• Any steam line flow at or above 4.0x10<sup>6</sup> lbm/hr<br>• Reactor mode switch in RUN and RPV pressure at or below 850 psig<br>• Main steam line radiation at or above 800 units<br>AND<br>no ATWS condition exists<br><br>THEN Confirm closed the following:<br><br>MSIVs: ____NSO3A, ____NS04A, ____NS03B, ____NS04B<br>IC VENTS: ____V-14-1,-19, ____V-14-5,-20<br>RX SAMPLE: ____V-24-30 (11F), ____V-24-29 (11F)<br>DW AIR SUPPLY: ____V-6-395 (11F)</td></tr>
<tr><td>Scram Discharge Volume Isolation</td><td>IF A Reactor Scram is initiated<br>AND<br>SDV HI-HI LVL SCRAM switch is not in BYPASS,<br><br>THEN Confirm closed the following:<br><br>NORTH SDV Vents & Drains _____<br>SOUTH SDV Vents & Drains _____</td></tr>
<tr><td>IC-A Isolation</td><td>IF IC-A is ruptured,<br><br>THEN Confirm closed the following:<br><br>IC ISOLATION VALVES: ____V-14-30, ____V-14-34, ____V-14-31, ____V-14-36<br>IC VENTS: ____V-14-5, ____V-14-20</td></tr>
</table>

| SYSTEM | OPERATING DETAILS |
|---|---|
| IC-B Isolation | **IF** IC-B is ruptured,<br><br>**THEN** Confirm closed the following:<br><br>IC ISOLATION VALVES: ____V-14-32, ____V-14-33, ____V-14-35, ____V-14-37<br>IC VENTS: ____V-14-1, ____V-14-19 |
| Cleanup System Isolation | **IF** Any of the following conditions exist:<br>• RPV water level at or below **86 in.**<br>• Drywell pressure at or above **3.0 psig**<br>• RWCU HELB Alarms<br><br>**THEN** Confirm closed the following Cleanup Isolation valves:<br><br>____V-16-1, ____V-16-2, ____V-16-14, ____V-16-61 |
| Shutdown Cooling System Isolation | **IF** Any of the following conditions exist:<br>• RPV water level at or below **86 in.**<br>• Drywell pressure at or above **3.0 psig**<br><br>**THEN** Confirm closed the following SDC Isolation Valves:<br><br>____V-17-54, ____V-17-19 |
| Isolation Condenser Initiation | **IF** RPV water level is at or below **86 in.**,<br><br>**THEN** confirm initiation of both Isolation Condensers. |
| Core Spray System Start | **IF** Any of the following conditions exist:<br>• RPV water level at or below **86 in.**<br>• Drywell pressure at or above **3.0 psig**<br><br>**THEN** Confirm start of one Main Pump and one Booster Pump in each Core Spray System. |

| SYSTEM | OPERATING DETAILS |
|---|---|
| Primary Containment Isolation | **IF** Any of the following conditions exist:<br>• RPV water level at or below **86 in.**<br>• Drywell pressure at or above **3.0 psig**<br><br>**THEN** Confirm closed the following valves that are not required to be open by the Emergency Operating Procedures: |

| System | Valve No. | | |
|---|---|---|---|
| DW Vent/Purge | V-27-1 | (Panel 11F) | _____ |
| | V-27-2 | " | _____ |
| | V-27-3 | " | _____ |
| | V-27-4 | " | _____ |
| Torus Vent | V-28-17 | (Panel 11F) | _____ |
| | V-28-18 | " | |
| Torus 2" Vent Bypass | V-28-47 | (Panel 11F) | _____ |
| DWEDT | V-22-1 | (Panel 11F) | _____ |
| | V-22-2 | " | _____ |
| DW Floor Sump | V-22-28 | (Panel 11F) | _____ |
| | V-22-29 | " | _____ |
| Torus/Rx Bldg. Vacuum Breakers | V-26-16 | (Panel 11F) | |
| | V-26-18 | " | _____ |
| TIP Valves | Common Ind. | (Panel 11F) | _____ |
| DW 2" Vent Bypass | V-23-21 | (Panel 12XR) | _____ |
| | V-23-22 | " | _____ |
| $N_2$ Purge | V-23-13 | (Panel 12XR) | _____ |
| | V-23-14 | " | _____ |
| | V-23-15 | " | _____ |
| | V-23-16 | " | _____ |
| $N_2$ Makeup | V-23-17 | (Panel 12XR) | _____ |
| | V-23-18 | " | _____ |
| | V-23-19 | " | _____ |
| | V-23-20 | " | _____ |

# SUPPORT PROCEDURE 16

BYPASSING MSIV LO-LO LEVEL ISOLATION INTERLOCKS

1.0 PREREQUISITES

Bypassing of the MSIV Lo-Lo level isolation interlocks has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Obtain four (4) bypass plugs from the EOP Tool Box in the Control Room.

3.2 Open the EOP BYPASS PLUGS panel in the rear of Panel 6R.

3.2.1 Insert a bypass plug in position BP1. _____

3.2.2 Insert a bypass plug in position BP2. _____

3.3 Open the EOP BYPASS PLUGS panel in the rear of Panel 7R.

3.3.1 Insert a bypass plug in position BP1. _____

3.3.2 Insert a bypass plug in position BP2. _____

3.4 Place the ISOL SIGNAL BYPASS V-6-395 switch in BYPASS position (Panel 11F). _____

3.5 Inform the GSS/GOS that the MSIV LO-LO Level Isolation Interlock has been bypassed.

# SUPPORT PROCEDURE 17

TERMINATION AND PREVENTION OF INJECTION

1.0 PREREQUISITES

Termination and prevention of injection has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

2.1 IF Core Spray actuating signals are present,

THEN OVERRIDE Core Spray initiation logic by depressing the override switches for all the sensors that are lit and depressing all ACTUATED switches, whether lit or unlit.

3.0 PROCEDURE

3.1 Terminate and prevent Condensate and Feedwater injection by performing the following at Panel 5F/6F:

3.1.1 Trip all operating Feedwater Pumps. _____

3.1.2 Confirm one Condensate Pump running. _____

3.1.3 Place all individual FRV Controllers in MAN position. _____

3.1.4 Close all Feedwater Regulating Valves. _____

3.1.5 Close the Low Flow Valves. _____

3.2

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

Terminate and prevent Core Spray injection by performing the following at Panel 1F/2F:

3.2.1 Confirm all Core Spray Parallel Isolation Valve closed. _____

3.2.2 Confirm all operating Core Spray Booster Pumps tripped. _____

3.2.3 Confirm all Core Spray Main Pump control switches in PULL-TO-LOCK position. _____

3.3 Inform the operator controlling reactor pressure and the Licensed Operations Supervisor that the Isolation Condensers will initiate when RPV level reaches lo-lo water level.

# SUPPORT PROCEDURE 18

## BYPASSING RBCCW ISOLATION INTERLOCKS

1.0 PREREQUISITES

Bypassing of the RBCCW isolation has been directed by the Emergency Operating Procedures AND the RBCCW system is NOT isolated due to a LOCA or Main Steam Line Break (MSLB) in the Drywell.

2.0 PREPARATION

2.1

> NOTE
>
> After completing the following steps, Valves V-5-147, V-5-166 and V-5-167 will only operate from the Control Room. All automatic operation is removed.

In the rear of Panel 2R, open the EOP BYPASS PLUGS panel.

2.1.1 Remove the bypass plug from position BP1. _____

2.1.2 Remove the bypass plug from position BP2. _____

3.0 PROCEDURE

3.1

> CAUTION
>
> Reinitiating RBCCW flow to the Drywell following a LOCA or MSLB in the Drywell may cause a water hammer to occur and subsequent piping failure.

Verify that the RBCCW System is not isolated due to high Drywell pressure/low RPV water level conditions.

3.2 IF the RBCCW System is isolated due to high Drywell pressure/low RPV water level,

THEN inform the Licensed Operations Supervisor and do not attempt to reinitiate the RBCCW System flow to the Drywell.

3.3 Confirm open RBCCW Isolation Valves (Panel 1F/2F)

- V-5-147 _____
- V-5-166 _____
- V-5-167 _____
- V-5-148 _____

3.4 Start all available DW RECIRC FANS by placing their respective control switches in ON (Panel 11R). _____

3.5 Place the ISOL SIGNAL BYPASS V-6-395 switch in BYPASS position (Panel 11F). _____

# SUPPORT PROCEDURE 19

FEEDWATER/CONDENSATE AND CRD SYSTEM OPERATION

1.0 PREREQUISITES

Directed to maintain RPV level with the Feed, Condensate and CRD Systems by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

> CAUTION
>
> A large power excursion and substantial core damage could result from a rapid increase in injection into the RPV.

3.1 Feedwater/Condensate

3.1.1 Confirm one Condensate Pump and one Feedwater Pump operating.

3.1.2 Control RPV Water level using the following:

- Feedwater Regulating Valves
- MFRV Block Valves
- Feedwater Low Flow Valves
- Heater Bank Outlet Isolation Valves
- Feedwater and Condensate Pumps

3.1.3 IF RPV water level cannot be maintained below 160 in.,
THEN close the Heater Bank Outlet Isolation Valve for the operating pump.

3.1.4 IF RPV water level reaches 170 in.,
THEN trip the operating feedwater pump.

3.1.5 IF RPV water level reaches 170 in.,

AND

RPV pressure is below 350 psig (shutoff head of the Condensate Pumps),

THEN close all Heater Bank Outlet Isolation Valves.

3.1.6 IF RPV water level continues to increase,

THEN trip the operating Condensate Pumps.

3.2 CRD

3.2.1 IF Control Rods cannot be driven using CRD

AND

CRD bypass flow is desired for RPV water level control,

THEN 1. Start all available CRD Pumps (Panel 4F).

2. Open CRD Bypass Isolation Valve, V-15-237 (RB 23).

3. Monitor flow on Flow Gage FI-225-2 (RB 23)

AND

throttle open CRD Bypass Valve V-15-30 (RB 23) so as not to exceed 150 gpm flow for one or two pump operation.

3.2.2 IF RPV water level cannot be maintained less than 160 in.,

THEN 1. Throttle closed CRD Bypass Valve, V-15-30 (RB 23), if opened

2. Throttle closed CRD Flow Control Valve (Panel 4F)

3.2.3 IF RPV water level reaches 170 in.,

AND

the CRD System is NOT required for rod insertion,

THEN trip any operating CRD pump (Panel 4F).

# SUPPORT PROCEDURE 20

LOW PRESSURE INJECTION DURING AN ATWS

1.0 PREREQUISITES

Injecting water with Low Pressure Systems has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

2.1 IF Core Spray activating signals are present,

THEN override Core Spray initiation logic by depressing the OVERRIDE switches for all the sensors that are lit and depressing all ACTUATED switches, whether lit or unlit (Panel 1F/2F).

2.2 The procedure for using Condensate Transfer for injection requires the use of an MB-1 key and access to the Rx. Bldg.

3.0 PROCEDURE

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

3.1 IF Core Spray System 1 is to be used to inject Fire Water,

THEN perform the following:

3.1.1 Confirm stopped the Core Spray Main and Booster Pumps in Core Spray System 1 (Panel 1F/2F). _____

3.1.2 Place Core Spray System 1 Main Pump control switches in PULL-TO-LOCK position (Panel 1F/2F). _____

3.1.3 Close Tell-Tale Drain Valve, V-20-91 (RB 23 North or North Side RB outside). _____

3.1.4 Confirm running all Diesel Fire Pumps by placing their control switches in MAN position (Panel 13R). _____

3.1.5 Confirm open Core Spray System 1 Discharge Valve, V-20-12 (Panel 1F/2F). _____

3.1.6 Confirm open either Core Spray System 1 Parallel Isolation Valve, V-20-15 or V-20-40 (Panel 1F/2F). _____

3.1.7 Confirm closed Core Spray System 1 Test Flow Return Valve, V-20-27 (Panel 1F/2F). _____

3.1.8 Close Core Spray System 1 Pump Suction Valves V-20-32 and V-20-3 (Panel 1F/2F). _____

3.1.9 Slowly throttle open Fire Water Supply Valve, V-20-83 (RB 23 North or North Side RB outside) as required to maintain RPV Level. _____

3.2 IF Core Spray System 2 is to be used to inject Fire Water, THEN perform the following:

3.2.1 Confirm stopped the Core Spray Main and Booster Pumps in Core Spray System 2 (Panel 1F/2F). _____

3.2.2 Place Core Spray System 2 Main Pump control switches in PULL-TO-LOCK position (Panel 1F/2F). _____

3.2.3 Close Tell-Tale Drain Valve, V-20-90 (RB 23 South or South Side RB outside). _____

3.2.4 Confirm running all Diesel Fire Pumps by placing their control switches in MAN position (Panel 13R). _____

3.2.5 Confirm open Core Spray System 2 Discharge Valve, V-20-18 (Panel 1F/2F). _____

3.2.6 Confirm open either Core Spray System 2 Parallel Isolation Valve, V-20-21 or V-20-41 (Panel 1F/2F). _____

3.2.7 Confirm closed Core Spray System 2 Test Flow Return Valve, V-20-26 (Panel 1F/2F). _____

3.2.8 Close Core Spray System 2 Pump Suction Valves V-20-33 and V-20-4 (Panel 1F/2F). _____

3.2.9 Slowly throttle open Fire Water Supply Valve, V-20-82 (RB 23 South or South Side RB outside) as required to maintain RPV Level. _____

3.3 IF Core Spray System 1 is to be used to inject Condensate Transfer,

THEN perform the following:

3.3.1 Confirm stopped the Core Spray Main and Booster Pumps in Core Spray System 1 (Panel 1F/2F). _____

3.3.2 Place Core Spray System 1 Main Pump control switches in PULL-TO-LOCK position (Panel 1F/2F). _____

3.3.3 Unlock and open Regulator Bypass valves, V-11-110 and V-11-111 (RB 51 NW). _____

3.3.4 Confirm open Core Spray System 1 Discharge Valve, V-20-12 (Panel 1F/2F). _____

3.3.5 Confirm open either Core Spray System 1 Parallel Isolation valve, V-20-15 or V-20-40 (Panel 1F/2F). _____

3.3.6 Confirm closed Core Spray System 1 Test Flow Return Valve, V-20-27 (Panel 1F/2F). _____

3.3.7 Start all available Condensate Transfer Pumps (Panel 5F/6F). _____

3.3.8 Close Core Spray System 1 Pump Suction Valves V-20-32 and V-20-3 (Panel 1F/2F). _____

3.4 IF Core Spray System 2 is to be used to inject Condensate Transfer,

THEN perform the following:

3.4.1 Confirm stopped the Core Spray Main and Booster Pumps in Core Spray System 2 (Panel 1F/2F). _____

3.4.2 Place Core Spray System 2 Main Pump control switches in PULL-TO-LOCK position (Panel 1F/2F). _____

3.4.3 Unlock and open Regulator Bypass valves, V-11-109 and V-11-108 (RB 75 S). _____

3.4.4 Confirm open Core Spray System 2 Discharge Valve, V-20-18 (Panel 1F/2F). _____

3.4.5 Confirm open either Core Spray System 2 Parallel Isolation Valve, V-20-21 or V-20-41 (Panel 1F/2F). _____

3.4.6 Confirm closed Core Spray System 2 Test Flow Return Valve, V-20-26 (Panel 1F/2F). _____

3.4.7 Start all available Condensate Transfer Pumps (Panel-5F/6F). _____

3.4.8 Close Core Spray System 2 Pump Suction Valves V-20-33 and V-20-4 (Panel 1F/2F). _____

3.5

| CAUTION |
| --- |
| Core Spray suction strainer plugging may occur due to debris in the Primary Containment and result in a loss of Core Spray System Flow. |

IF injection with the Core Spray Main Pump is directed,

THEN inject with Core Spray as follows:

3.5.1 Confirm open Core Spray Pump Suction Valve for pump to be started (Panel 1F/2F). _____

3.5.2

> CAUTION
>
> Diesel Generator overload will result if a Core Spray Main Pump is started with a Diesel Generator load of greater than 2250 kw.

IF Bus 1C or 1D are being supplied by a Emergency Diesel Generator,

THEN verify that adequate load margin is available so as NOT to exceed EDG load limit when starting Core Spray Main Pumps.

3.5.3

> CAUTION
>
> NPSH problems will develop on all operating pumps if more than 4 Containment Spray/Core Spray Main pumps are operated at the same time.

IF 4 Containment Spray/Core Spray Main pumps are in operation,

THEN secure Containment Spray pumps as necessary to run Core Spray pumps. _____

3.5.4 Start one Core Spray Main Pump (Panel 1F/2F). _____

3.5.5 Confirm open the selected system Discharge Valve (V-20-12 or V-20-18). (Panel 1F/2F) _____

3.5.6 Open a Parallel Isolation Valve in the selected system, (V-20-15, V-20-40, V-20-21 or V-20-41). (Panel 1F/2F) _____

3.5.7 Start a Main Pump in the other Core Spray System, or open additional Parallel Isolation Valves as directed by the GSS/GOS.

# SUPPORT PROCEDURE 10

STOPPING INJECTION FROM THE CORE SPRAY SYSTEM

1.0 PREREQUISITES

Stopping Core Spray injection has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

When directed by the GOS/GSS, perform the following:

3.1 Depress the OVERRIDE switches for all sensors that are lit (Panel 1F/2F). _____

3.2 Depress ALL ACTUATED switches whether lit or unlit (Panel 1F/2F). _____

3.3 Confirm closed Core Spray Parallel Isolation Valves NOT required to be open to assure adequate core cooling. _____

3.4 Secure Core Spray Booster Pumps NOT required to assure adequate core cooling by placing their respective control switch in STOP (Panel 1F/2F). _____

3.5 Secure Core Spray Main Pumps NOT required to assure adequate core cooling by placing their respective control switch in STOP (Panel 1F/2F). _____

3.6 Verify Core Spray KEEP FILL TROUBLE (B-3-d) alarm is NOT illuminated. _____

# SUPPORT PROCEDURE 11

ALTERNATE PRESSURE CONTROL SYSTEMS

ISOLATION CONDENSERS

1.0 PREREQUISITES

RPV pressure control using the Isolation Condensers has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Procedure for Isolation Condenser A

3.1.1 Confirm Recirculation Pump A tripped. _____

IF Recirculation Pump A cannot be tripped from the Control Room,

THEN trip the Recirculation Pump A Supply Breaker locally at 4160V Bus 1A.

3.1.2

| CAUTION |
| --- |
| If RPV water level exceeds 180 in., initiation of an isolation condenser can cause water hammer to occur. |

Verify RPV water level is below 160 in. _____

3.1.3 IF Isolation Condenser A has isolated on a high flow condition caused by Recirculation Pump operation,

THEN restore the IC to operation as follows:

1. Open Steam Supply valves V-14-30 & V-14-31 by placing their control switches in the OPEN position (Panel 1F/2F).
2. Open DC Condensate Return valve V-14-34 by placing its control switch in the OPEN position (Panel 1F/2F).

3. Open AC Condensate Return valve V-14-36 by placing its control switch in the OPEN position (Panel 1F/2F).
4. Reset the Isolation Condenser isolation signal using the Isolation Condenser Reset pushbutton (Panel 4F).
5. Restore all Isolation Condenser A valve control switches to their AUTO position.

3.1.4 Confirm Open DC condensate return valve V-14-34 (Panel 1F/2F).

3.1.5 Control RPV pressure in specified band by cycling V-14-34.

3.1.6 Make up to IC shell to maintain IC level between 4.8 ft. and 7.7 ft. by cycling Isolation Condenser A Make-Up Valve V-11-36 (Panel 5F/6F).

3.2 Procedure For Isolation Condenser B

3.2.1 Confirm Recirculation Pump E tripped. _____

IF Recirculation Pump E cannot be tripped from the Control Room,

THEN trip the Recirculation Pump E Supply Breaker locally at 4160V Bus 1A.

3.2.2

| CAUTION |
| --- |
| If RPV water level exceeds 180 in., initiation of an isolation condenser can cause water hammer to occur. |

Verify RPV water level is below 160 in. _____

3.2.3 IF Isolation Condenser B has isolated on a high flow condition caused by Recirculation Pump operation,

THEN restore the IC to operation as follows:

1. Open Steam Supply valves V-14-32 & V-14-33 by placing their control switches in the OPEN position (Panel 1F/2F).
2. Open DC Condensate Return valve V-14-35 by placing its control switch in the OPEN position (Panel 1F/2F).
3. Open AC Condensate Return valve V-14-37 by placing its control switch in the OPEN position (Panel 1F/2F).
4. Reset the Isolation Condenser isolation signal using the Isolation Condenser Reset pushbutton (Panel 4F).
5. Restore all Isolation Condenser B valve control switches to their AUTO position.

3.2.4 Confirm open DC condensate return valve V-14-35 (Panel 1F/2F). _____

3.2.5 Control RPV pressure in specified band by cycling V-14-35.

3.2.6 Make up to IC shell to maintain IC level between 4.8 ft. and 7.7 ft. by cycling Isolation Condenser B Make-Up Valve V-11-34 (Panel 5F/6F).

# SUPPORT PROCEDURE 12

ALTERNATE PRESSURE CONTROL SYSTEMS

EMRVs

1.0 PREREQUISITES

RPV pressure control using the EMRVs has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Verify that Torus water level is above 90 in. _____

3.2 Place the selected EMRV control switch in the MAN position (Panel 1F/2F).

3.3 Control reactor pressure in the specified band by opening the EMRVs in the following sequence:

NR108A

NR108D

NR108B

NR108C

NR108E

3.4 Monitor Torus water temperature.

# SUPPORT PROCEDURE 13

ALTERNATE PRESSURE CONTROL SYSTEMS

CLEANUP IN RECIRCULATION MODE

1.0 PREREQUISITES

1.1 RPV pressure control using the Reactor Water Cleanup System in Recirculation Mode has been directed by the Emergency Operating Procedures.

1.2 No RWCU HELB exists.

2.0 PREPARATION

When directed by GSS/GOS, perform the following:

2.1 Confirm that a Cleanup System line break does not exist (Alarms D-1-d/D-2-d).

2.2 Open the EOP BYPASS PLUGS panel in the rear of Panel 3F.

2.2.1 Remove the bypass plug from position BP2 and insert into position BP1. _____

2.2.2 Remove the bypass plug from position BP4 and insert into position BP3. _____

2.2.3 Remove the bypass plug from position BP6 and insert into position BP5. _____

2.2.4 Remove the bypass plug from position BP8 and insert into position BP7. _____

2.3 Obtain a flat head screwdriver from the EOP Tool Box in the Control Room.

2.4 Open the front panel of Auxiliary Relay Panel ER-215-087 (A/B Battery Room).

2.4.1 Remove bypass plug 1 (upper left hand corner). _____

2.4.2 Remove bypass plug 2 (upper left hand corner). _____

3.0 PROCEDURE

When directed by the GSS/GOS, perform the following

3.1 Bypass and isolate Cleanup Filters as follows:

3.1.1 Open V-16-83, Filter Bypass Valve (RB 75). _____

3.1.2 Close Filter Outlet Valve ND28A or ND28B (RB 75). _____

3.2

| NOTE |
| --- |
| The remote valve operators to valves V-16-102, V-16-113, and V-16-114 have been disconnected. |

Bypass and isolate the Cleanup Demineralizer:

3.2.1 Open Demineralizer Bypass Valve V-16-113 (RB 75 SW). _____

3.2.2 Close Demineralizer Outlet Valve V-16-114 (RB 75 SW). _____

3.2.3 Close Demineralizer Inlet Valve V-16-102 (RB 75 SW). _____

3.3 IF Cleanup System is not in service

THEN Place the system in service in accordance with Procedure 303, Reactor Cleanup Demineralizer System.

3.4 Maximize RBCCW flow to the Non-Regenerative Heat Exchanger. Maximum RBCCW flow allowed is 1750 gpm.

3.5 Maintain RPV pressure within desired band by throttling RBCCW flow to the NRHX.

# SUPPORT PROCEDURE 14

ALTERNATE PRESSURE CONTROL SYSTEMS

CLEANUP IN LETDOWN MODE

1.0 PREREQUISITES

1.1 RPV pressure control using the Reactor Water Cleanup System in Letdown Mode has been directed by the Emergency Operating Procedures.

1.2 Boron Injection is not required.

1.3 No RWCU HELB exist.

2.0 PREPARATIONS

None

3.0 PROCEDURE

3.1 Confirm that a Cleanup System line break does not exist (Alarms D-1-d/D-2-d).

3.2 IF Cleanup System is not in service
THEN place the system in service in accordance with Procedure 303, Reactor Cleanup Demineralizer System. _____

3.3 Confirm closed the following valves:

- Discharge to Radwaste V-16-57 (Panel 3F). _____
- Discharge to Condenser V-16-60 (Panel 3F). _____
- Discharge Flow Controller FCV-ND-22 (Panel 3F). _____

3.4 Open Discharge to Condenser Valve V-16-60 (Panel 3F). _____

3.5 Commence Letdown Flow to the main condenser by throttling open Discharge Flow Controller FCV-ND-22 (Panel 3F). _____

3.6 Carefully monitor Cleanup System Flow and make necessary adjustments with System Flow Controller FCN-ND-16 (Panel 3F) to maintain proper differential pressures across demineralizer and filter elements. _____

3.7 Maintain NRHX outlet temperature below 130°F by either reducing Letdown Flow using FCV-ND-22 (Panel 3F) or increasing RBCCW Flow through the NRHX using valve V-5-122 (RB 51 SE). _____
Maximum RBCCW Flow allowed is 1750 gpm.

3.8 Adjust letdown flow rate by throttling FCV-ND-22 to establish required cooldown rate or pressure band. _____

3.9 IF NRHX outlet temperature cannot be maintained less than 130°F

AND

the system trips

THEN 1. Bypass and isolate the Cleanup Filter:

a. Open V-16-83, Filter Bypass Valve (RB 75). _____

b. Close Filter Outlet Valve ND28A or ND28B (RB 75). _____

2. Bypass and isolate the Cleanup Demineralizer:

| NOTE |
| --- |
| The remote valve operators to valves V-16-102, V-16-113, and V-16-114 have been disconnected. |

a. Open Demineralizer Bypass Valve V-16-113 (RB 75 SW). _____

b. Close Demineralizer Outlet Valve V-16-114 (RB 75 SW). _____

c. Close Demineralizer Inlet Valve V-16-102 (RB 75 SW). _____

3. Contact I & C Department to inhibit the NRHX outlet high temperature as follows:

a. At RK05 (75' Elev.), rotate the dial on TIS-1J33 counterclockwise until the maximum trip setting is obtained.

4. Return the Cleanup System to service in accordance with Procedure 303, Reactor Cleanup Demineralizer System. _____

5. Perform Steps 3.2 through 3.5 to establish letdown flow. _____

6. Adjust letdown flow rate by throttling FCV-ND-22 to establish required cooldown rate or pressure band. _____

# SUPPORT PROCEDURE 15

ALTERNATE PRESSURE CONTROL SYSTEMS

IC TUBE SIDE VENTS

1.0 PREREQUISITES

RPV pressure control using the Isolation Condenser Tube Side Vents has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following in preparation for using the IC Tube Side Vents for RPV pressure control.

2.1 Verify the following:

1. Isolation Condensers are not required to be isolated. _____
2. Main Condenser is intact. _____
3. Offsite radioactivity release rate is expected to remain below the release rate which requires an Unusual Event. _____

2.2 Confirm that the Isolation Condenser Vent Valve control switches for the Isolation Condenser to be used are in the normal mid-position (Panel 11F).

| | | |
|---|---|---|
| Isolation Condenser A | V-14-5 | |
| | V-14-20 | _____ |
| Isolation Condenser B | V-14-1 | |
| | V-14-19 | _____ |

2.3 Open the EOP BYPASS PLUGS panel inside of Panel 10XF.

2.3.1 Remove the bypass plug from position BP2 and insert it into position BP1. _____

2.3.2 Remove the bypass plug from position BP4 and insert it into position BP3. _____

3.0 PROCEDURE

3.1 Verify that RPV water level is below 180 in.

3.2 Confirm open the Isolation Condenser Steam Inlet Valves (1F/2F) for the Isolation Condensers to be used.

| | | |
|---|---|---|
| Isolation Condenser A | V-14-30 | _____ |
| | V-14-31 | _____ |
| Isolation Condenser B | V-14-32 | _____ |
| | V-14-33 | _____ |

3.3 Open the Isolation Condenser Tube Side Vents (Panel 11F) for the Isolation Condensers to be used.

| | | |
|---|---|---|
| Isolation Condenser A | V-14-5 | |
| | V-14-20 | _____ |
| Isolation Condenser B | V-14-1 | |
| | V-14-19 | _____ |

3.4 Control Reactor pressure in specified band by cycling the tube side vents designated in Step 3.3.

# SUPPORT PROCEDURE 21

ALTERNATE INSERTION OF CONTROL RODS

1.0 PREREQUISITES

Insertion of Control Rods utilizing alternate methods has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

| NOTE |
| --- |
| Alternate methods of control rod insertion may be performed in any order or concurrently as applicable. |

When directed by the GSS/GOS, perform the following:

3.1 Driving Control Rods

3.1.1 Start available CRD Pumps (Panel 4F). _____

3.1.2 Place Reactor Mode Switch in REFUEL (Panel 4F). _____

3.1.3 Place the ROD WORTH MININIZER keylock in BYPASS (Panel 4F). _____

3.1.4 Close CRD Drive Water Press Control Valve (NC18) (Panel 4F) to maximize CRD drive water differential pressure. _____

3.1.5 Close Charging Header Supply Valve V-15-52 (RB 23 SE). _____

3.1.6 Throttle closed bypass valve V-15-30 as required (RB 23 SE). _____

3.1.7 Rapidly insert control rods manually (Panel 4F). _____

3.2 Deenergize Scram Solenoids

3.2.1 IF MSIVs are closed,

THEN place both 100-amp Main RPS Breakers in OFF (Panel 6R/7R). _____

WHEN the control rods are no longer moving in,

THEN confirm the 100 amp Main RPS Breakers in ON. _____

3.2.2 IF MSIVs are open,

THEN place RPS Channel I and II Subchannel Test Keylocks IA, IB, IIA and IIB in TRIP position (Panel 6R/7R). _____

WHEN the control rods are no longer moving in,

THEN confirm the RPS Channel I and II Subchannel Test Keylocks in NORMAL position (Panel 6R/7R). _____

3.3 Venting the Scram Air Header

3.3.1 Close Scram Air Header Isolation Valve V-6-175 (RB23SE). _____

3.3.2 Open Scram Air Header Drain Valve V-6-409 (RB23SE). _____

3.3.3 WHEN control rods are no longer moving in,

THEN 1. Close Scram Air Header Drain Valve V-6-409. _____

2. Open Scram Air Header Isolation Valve V-6-175. _____

3.4 Manual Scram

3.4.1 Place the ARI Normal/Bypass Switch in BYPASS position (Rear of Panel 8R). _____

3.4.2 Depress the ARI Manual Reset pushbutton (Panel 4F). _____

3.4.3 IF Defeating RPS logic trips is necessary prior to resetting the scram,

THEN perform the following:

3.4.3.1 Obtain four (4) bypass plugs from the EOP Tool Box in the Control Room.

3.4.3.2 Open the EOP BYPASS PLUGS panel in the rear of Panel 6R.

1. Insert a bypass plug into BP5. _____
2. Insert a bypass plug into BP6. _____

3.4.3.3 Open the EOP BYPASS PLUGS panel in the rear of Panel 7R.

1. Insert a bypass plug into BP5. _____
2. Insert a bypass plug into BP6. _____

3.4.4 Confirm operating all available CRD Pumps (Panel 4F). _____

3.4.5 Reset the scram by depressing the Scram Reset Buttons (Panel 4F). _____

3.4.6 Confirm open SDV vent and drain valves (Panel 4F). _____

3.4.7 WHEN the SDV LEVEL HI-HI alarms (H-1-b and H-2-b) clear,

THEN manually scram the reactor by depressing the scram buttons (Panel 4F). _____

3.5 Opening Individual Scram Test Switches

3.5.1 Place the ARI Normal/Bypass Switch in Bypass position (Rear of Panel 8R). _____

3.5.2 Depress the ARI Manual Reset pushbutton (Panel 4F). _____

3.5.3 IF Defeating RPS Logic trips is necessary prior to resetting the scram,

THEN perform the following:

3.5.3.1 Obtain four (4) bypass plugs from the EOP Tool Box in the Control Room.

3.5.3.2 Open the EOP BYPASS PLUGS panel in the rear of Panel 6R.

1. Insert a bypass plug into BP5. _____
2. Insert a bypass plug into BP6. _____

3.5.3.3 Open the EOP BYPASS PLUGS panel in the rear of Panel 7R.

1. Insert a bypass plug into BP5. _____
2. Insert a bypass plug into BP6. _____

3.5.4 Confirm all available CRD Pumps are operating (Panel 4F). _____

3.5.5 Reset the scram by depressing the Scram Reset Buttons (Panel 4F). _____

3.5.6 Confirm open SDV vent and drain valves (Panel 4F). _____

3.5.7

> CAUTION
>
> While performing this procedure, potentially radioactive steam may be released and Reactor Building airborne contamination levels may increase.

Individually open the scram test switch on Panel 6XR for a control rod not inserted. _____

3.5.8 Close the scram test switch when the control rod stops moving. _____

3.5.9 Repeat Steps 3.5.7 and 3.5.8 as required. _____

3.6 Increasing CRD Cooling Water Differential Pressure

3.6.1 Start available CRD Pumps (Panel 4F). _____

3.6.2 Close Charging Header Supply Valve V-15-52 (RB 23 SE). _____

3.6.3 Increase CRD cooling water differential pressure. _____

3.6.4 Throttle closed bypass valve V-15-30 as required (RB 23 SE). _____

NOTE

This method is to be used ONLY if all other insertion methods fail.

3.7 Venting Control Rod Drive Over Piston Volume

NOTE

If no CRD Pumps are available, this method may still be used provided Reactor pressure is greater than 600 psig.

CAUTION

While performing this procedure, potentially radioactive steam may be released from the drain line effluent and Reactor Building airborne contamination levels may increase.

3.7.1 Start available CRD pumps (Panel 4F).

3.7.2 Close Cooling Water PCV isolation V-15-24 (RB23SE). _____

3.7.3 Close Exhaust Header root valve V-15-25 (RB23SE). _____

3.7.4 Close Stabilizer Unit Outlet valve V-15-40 (RB23SE). _____

3.7.5 Confirm closed Cooling Water PCV bypass valve V-15-131 (RB 23 SE). _____

3.7.6 Open drain valve V-15-74 (RB 23 SE). _____

3.7.7 Place Reactor Mode Switch in REFUEL (Panel 4F). _____

3.7.8 Insert control rods manually from Panel 4F. _____

3.7.9 Monitor Reactor Building airborne radiation levels.

3.7.10 WHEN control rods are no longer moving in

THEN 1. Close V-15-74 (RB 23 SE). _____

2. Open the following valves (RB 23 SE):

- V-15-40 _____
- V-15-25 _____
- V-15-24 _____

# SUPPORT PROCEDURE 22

INITIATING THE LIQUID POISON SYSTEM

1.0 PREREQUISITES

Initiation of Standby Liquid Control System has been directed by the Emergency Operating Procedures.

2.0 PREPARATIONS

None

3.0 PROCEDURE

> CAUTION
>
> Due to pressure fluctuations, Fuel Zone Level Indicator Channels "A" and "C" will not provide accurate indication of RPV water level if a Standby Liquid Control Pump is injecting into the RPV and should not be used.

3.1 Place the STANDBY LIQUID CONTROL keylock in the FIRE SYS 1 or FIRE SYS 2 position.

3.2 Verify the following:

1. PUMP ON light for selected system illuminated (Panel 4F).
2. SQUIBS light for selected system illuminated (Panel 4F).
3. PUMP DISCH PRESS greater than Rx pressure (Panel 4F).
4. FLOW ON Alarm annunciates (G-1-b).
5. SQUIB VALVE OPEN Alarm annunciates (G-2-b).

3.3 IF the above expected indications do NOT occur,
THEN place the STANDBY LIQUID CONTROL Keylock in the opposite position to use the other system.

# SUPPORT PROCEDURE 23

ALTERNATE BORON INJECTION WITH THE CLEANUP SYSTEM

1.0 PREREQUISITES

1.1 Injection of Boron via the Cleanup System has been directed by the Emergency Operating Procedures.

1.2 No RWCU HELB exists.

2.0 PREPARATION

2.1 Confirm that a Cleanup System line break does not exist.

(Alarms D-1-d/D-2-d)

| NOTE |
| --- |
| After completing the steps in this section, Cleanup System Valves V-16-1, V-16-2, V-16-14 and V-16-61 will only operate from the control switches in the Control Room. All automatic operation will be removed. |

2.2 Open the EOP BYPASS PLUGS panel in the rear of Panel 3F.

2.2.1 Remove the bypass plug from position BP2 and insert into position BP1. _____

2.2.2 Remove the bypass plug from position BP4 and insert into position BP3. _____

2.2.3 Remove the bypass plug from position BP6 and insert into position BP5. _____

2.2.4 Remove the bypass plug from position BP8 and insert into position BP7. _____

2.3 Obtain a flat head screwdriver from the EOP Tool Room in the Control Room.

2.4 Open the front panel of Auxiliary Relay Panel ER-215-087 (A/B Battery Room).

2.4.1 Remove bypass plug 1 (upper left hand corner). _____

2.4.2 Remove bypass plug 2 (upper left hand corner). _____

3.0 PROCEDURE

When directed by the GSS/GOS, perform the following:

3.1 IF no recirculation pump is running,

THEN 1. Confirm at least one recirculation loop suction and discharge valves open other than B loop.

2. Close the B recirc loop discharge and discharge bypass valves.

3.2 Bypass and isolate the cleanup filters:

3.2.1 Open V-16-83, Filter Bypass Valve (RB 75).

3.2.2 Confirm close ND28A and ND28B, Filter Outlet Valve (RB 75).

3.3

NOTE

The remote valve operators to valves V-16-102, V-16-113, and V-16-114 have been disconnected.

Bypass and isolate the Cleanup Demineralizer:

3.3.1 Open V-16-113, Demineralizer Bypass Valve (RB 75 SW).

3.3.2 Close V-16-102, Demineralizer Inlet Valve (RB 75 SW).

3.3.3 Close V-16-114, Demineralizer Outlet Valve (RB 75 SW).

3.4 IF Cleanup System is not in service,

THEN Place the system in service in accordance with Procedure 303, Reactor Cleanup Demineralizer System.

3.5 Use a backwashed/empty Cleanup Filter, or backwash a Cleanup Filter as follows:

3.5.1 Confirm Cleanup Filter Backwash Tank full. (Pressure Gauge on RB 119' El. under tank should indicate -11.6 psig).

3.5.2

CAUTION

If Sludge Receiver Tank level is over nine (9) feet, the backwashing sequence can cause contamination of the plant ventilation system via six inch vent.

Verify Sludge Receiver Tank has sufficient volume to accommodate backwashing a filter. Approximately a 2.5 ft. level increase will occur per backwash.

3.5.3

NOTE

Only one set of Filter Recycle Valves are capable of being open at any one time.

Place cleanup filter in recycle as follows:

1. Open ND-31 A(B) Precoat/Recycle Outlet Valve.
2. Start Precoat Pump to selected filter A(B).
3. Open ND-30 A(B) Precoat/Recycle Inlet Valve.

3.5.4 Press ND-35 A(B) Backwash Programmer Control START button, until the A(B) programmer seals in. It is sealed in when the green START and red UNIT IN BACKWASH lights stay on after the button is released.

3.5.5 Place PRECOAT PUMP CONTROL switch in OFF.

3.5.6 The following automatic sequence will occur:

1. ND-27A(B), Filter Inlet Valve, closes.
2. ND-23A(B), Air Inlet Valve, opens.
3. ND-25A(B), 1 in. Vent Valve (to RBEDT), opens.
4. ND-25A(B) closes.
5. ND-30A(B), Precoat (Recycle) Inlet Valve, and ND-31A(B), Back to Precoat Valve, close.
6. ND-26A(B), Filter Sludge Tank Inlet Valve opens.
7. ND-23A(B), Air Inlet Valve, closes.
8. ND-24A(B), Vent/Overflow Valve, opens.

3.6 IF the Filter Aid Precoat Tank is being used to mix and add powdered Boric Acid and Borax,

THEN continue in this procedure at Step 3.22.

3.7 IF the contents of the SLC Storage Tank is being injected using the Cleanup System,

THEN continue in this procedure at Step 3.8.

3.8 Drain the Filter Aid Precoat Tank by opening V-16-117, Filter Aid Precoat Tank Drain Valve. Close V-16-117 when the tank is drained.

3.9 Transfer the contents of the SLC Storage Tank to the Filter Aid Precoat Tank by performing Steps 3.9.1 through 3.9.4.

3.9.1 Connect a hose downstream of V-19-22, Pump A Suction Header Drain Valve, (RB95) and route the free end to the Filter Aid Precoat Tank. Insert it through the hinged lid at the top and secure.

3.9.2 Unlock V-19-22, Pump A Suction Header Drain Valve.

3.9.3 Open V-19-22, Pump A Suction Header Drain Valve and fill the Filter Aid Precoat Tank to 90% full by gravity draining the SLC Storage Tank.

3.9.4 Close V-19-22, Pump A Suction Header Drain Valve.

3.10 Close V-16-108, Filter Recycle Valve.

3.11 Verify V-16-109, Cleanup Filter Return to Precoat Tank, is closed.

3.12 Open ND-30A(B), Precoat/Recycle Inlet Valve.

3.13 Open V-16-107, Precoat Pump Suction Valve.

3.14 Place ND32, Precoat Pump Discharge Valve, control switch in the HOLD position.

3.15 Start the Precoat Pump in HAND position.

3.16 Open ND25A(B), 1 in. Vent Valve (to RBEDT).

3.17 WHEN a steady stream of water is observed in the sightglass downstream of Valve ND-25A(B)

OR the Cleanup Filter Precoat Tank low level alarm annunciates,

THEN 1. Stop the Precoat Pump.

2. Close Valves ND-25A(B), V-16-107, and ND-30A(B).

3.18 IF the Cleanup Filter Precoat Tank has reached the low level limit,

THEN repeat Steps 3.9.3 through 3.17.

3.19

> NOTE
>
> During valving operations allow sufficient time for the (Red, Green) valve indication lights to completely change over.

Inject boron in accordance with Steps 3.19.1 through 3.19.4.

3.19.1 Open the ND27A(B), Filter Inlet Valve, by placing its selector switch to the OPEN position.

3.19.2

> NOTE
>
> When Valve ND28A(B) is placed in AUTO, if the valve does not open or if it opens and then closes, a Cleanup Filter Isolation signal was actuated while the filter was in hold, and the programmer needs to be reset. Instructions for resetting the programmer are contained in Procedure 303, Reactor Cleanup Demineralizer System.

Open ND28A(B), Filter Outlet Valve, by placing its selector switch to the AUTO position.

3.19.3 Close V-16-83, Cleanup Filter Bypass Valve. Allow approximately one (1) minute to ensure that the Filter Outlet Valve (ND28A(B) remains open.

3.19.4 Operate the Cleanup System in this mode for five (5) minutes.

3.20 Bypass and isolate the Cleanup Filters.

3.20.1 Open V-16-83

3.20.2 Close ND27A(B)

3.20.3 Close ND28A(B)

3.21 Repeat Steps 3.9 through 3.20 until the contents of the SLC Storage Tank are injected into the reactor.

NOTE

Steps 3.22 through 3.37 are used to mix and inject powdered boron using the Cleanup System and the Precoat Tank.

3.22

NOTE

As required by Section 3.22, Boric Acid and Borax come in approximately 300 lb. barrels and are stored in the warehouse under Stock Numbers 001-512-1800-1 (Bin 2-Q068-E,J) and 001-512-2000-1 (Bin 2-Q064-E) respectively. Although only six (6) barrels each are necessary to achieve a cold Boron shutdown weight of 273 lbs., plus a 25 percent conservatism, all available barrels (normally 10 each) should be transported to the Reactor Building 75 ft. elevation.

Verify that the Precoat Tank is 80% full and if not, fill with condensate transfer to a level of 80%.

3.23 Start the Precoat Tank Agitator and Precoat Tank Evacuator.

3.24 Add four barrels of Boric Acid and four barrels of Borax to the Filter Aid Precoat Tank and mix thoroughly.

3.25 Close V-16-108, Filter/Recycle Valve.

3.26 Verify V-16-109, Cleanup Filter Return to Precoat Tank Valve, is closed.

3.27 Open ND-30A(B), Precoat/Recycle Inlet Valve.

3.28 Open V-16-107, Precoat Pump Suction Valve.

3.29 Place ND32, Precoat Pump Discharge Valve, control switch in the HOLD position.

3.30 Start the Precoat Pump in HAND position.

3.31 Open ND-25A(B), 1 in. Vent Valve (to RBEDT).

3.32 WHEN a steady stream of water is observed in the sightglass downstream of valve ND-25A(B),

OR the Cleanup Filter Precoat Tank low level alarm annunciates,

THEN 1. Place the Precoat Pump control switch to OFF.

2. Close valves ND-25A(B), V-16-107 and ND-30A(B).

3.33 IF the Filter Aid Precoat Tank has reached the low level limit

THEN 1. Fill the Filter Aid Precoat Tank with condensate to a level of 80%.

2. Repeat Steps 3.27 through 3.32.

3.34 Stop the Precoat Tank Agitator and Dust Evacuator.

3.35

NOTE

During valving operations, allow sufficient time for the (Red, Green) valve indication lights to completely change over.

Inject boron in accordance with Steps 3.35.1 through 3.35.4.

3.35.1 Open ND-27A(B), Filter Inlet Valve, by placing its selector switch to the OPEN position.

3.25.2

NOTE

When Valve ND28A(B) is placed in AUTO, if the valve does not open or if it opens and then closes, a Cleanup Filter Isolation signal was actuated while the filter was in hold, and the programmer needs to be reset. To reset programmer refer to Procedure 303, Reactor Cleanup Demineralizer System.

Open ND28A(B), Filter Outlet Valve, by placing its selector switch to the AUTO position.

3.25.3 Close V-16-83, Cleanup System Filter Bypass Valve. Allow approximately one (1) minute to ensure that the Filter Outlet Valve ND28A(B) remains open.

3.25.4 Operate the Cleanup System in this mode for five (5) minutes.

3.36 Bypass and isolate the Cleanup Filters by opening V-16-83 and closing ND27A(B) and ND28A(B).

3.37 Return to Step 3.5 as required to add additional boron.

# SUPPORT PROCEDURE 24

ALTERNATE BORON INJECTION WITH THE FEED AND CONDENSATE SYSTEM

1.0 PREREQUISITES

Injection of Boron via the Feed and Condensate System has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

NOTE

The required Boric Acid and Borax come in approximately 300 lb. barrels and are stored in the warehouse under Stock Numbers 001-512-1800-1 (Bin 2-Q068-E,J) and 001-512-2000-1 (Bin 2-Q064-E) respectively. Although only six (6) barrels each are necessary to achieve a cold shutdown Boron weight of 273 lbs. plus a 25 percent conservatism, all available barrels (normally 10 each) should be transported to the Turbine Operating Floor.

2.1 Transport all available barrels of Boric Acid and Borax from the warehouse to the Turbine Operating Floor. _____

2.2 Select a Condensate Demineralizer and transfer its resin to the Final Rinse & Storage Tank in accordance with Procedure 319, Condensate Demineralizer Resin Regeneration and Transfer System. _____

2.3 Confirm open Condensate Transfer Supply Valve V-11-14. (Con Demin Area) _____

2.4 Confirm open FR & ST Bypass Valve V-2-788. (Regen Room) _____

2.5 Confirm closed Resin Transfer Piping Cross-Connect Valve V-2-786 and FR & ST Inlet Valve V-2-787. (Regen Room) _____

2.6 Check closed pressure breaker valves V-2-S-7 and V-2-S-9, by observing closed (green) indicating lights. _____

3.0 PROCEDURE

When directed by the GSS/GOS, perform the following:

3.1 Addition of Borax and Boric Acid into the Cation Tank

> NOTE
>
> Unless otherwise noted, all valve manipulations refer to selecting and operating a valve on the J.O. Backwash MANUAL OPERATION screen.

3.1.1 On the J.O. Backwash Main Menu, select the MANUAL OPERATION function. _____

3.1.2 Vent and drain the cation tank as follows:

3.1.2.1 Open vent valve V-2-C-4. _____

3.1.2.2 Open rinse outlet valve V-2-C-2. _____

3.1.3 WHEN the cation tank is vented and drained,

THEN close rinse outlet valve V-2-C-2. _____

3.1.4 Open rinse inlet valve V-2-C-8 until the tank is approximately 30% full, then close V-2-C-8. _____

3.1.5

> NOTE
>
> Equipment for performing this step is located on the EOP Locker on the Heater Bay Roof.

On the heater bay roof, perform the following:

3.1.5.1 Manually open pressure gauge isolation valve V-2-743 and verify that the cation tank is depressurized, then close V-2-743. _____

3.1.5.2 Confirm closed cation tank resin fill valve V-2-742. _____

3.1.5.3 Remove the flange above V-2-742. Insert the funnel and hook up the water hose. The funnel and hose are located on the east wall of the Turbine Building, directly in-line with the fill valve. _____

3.1.5.4 Open cation tank resin fill valve V-2-742. _____

3.1.5.5

> NOTE
>
> Three drums of Borax and three drums of Boric Acid shall be added to the cation tank. The time assumption for the addition of the six drums is approximately 45 minutes.

Open Domestic Water Valve V-10-562 and add three drums of Boric Acid and three drums of Borax to the cation tank one scoop at a time. Alternate scoops of boric acid and borax when filling cation tank. _____

3.1.5.6 WHEN all six drums have been added

OR

cation tank is 75% full,

THEN close Domestic Water Valve V-10-562 and resin fill valve V-2-742. _____

3.1.6 IF cation tank level is not approximately 75% full,

THEN open rinse inlet valve V-2-C-8 until cation tank level indicates approximately 75% full, then close V-2-C-8. _____

3.1.7 Open air inlet valve V-2-C-3, and air mix cation tank contents for 5-10 minutes, then close V-2-C-3. _____

3.1.8 Close vent valve V-2-C-4, and confirm closed vent valve V-2-C-14. _____

3.2 Transferring Borated Water from the Cation Tank to the Condensate Demineralizer Unit.

| NOTE |
| --- |
| This instruction and subsequent valve management will apply to condensate demineralizer unit 1-1. This same procedure is typical for the remaining demineralizer units. |

3.2.1 Ensure the demineralizer to be used is isolated and drained by performing the following:

3.2.1.1 Verify the following valves are closed:

- Condensate Inlet V-2-D-11 _____
- Condensate Outlet V-2-D-12 _____
- Mixed Resin Inlet V-2-D-13 _____
- Mixed Resin Outlet V-2-D-14 _____
- Recycle Outlet V-2-D-15 _____
- Vent V-2-D-16. _____

3.2.1.2 Drain the unit by manually performing the following:

- Confirm closed vent valve V-2-D-100. _____
- Open header vent valve V-2-D-99. _____
- Open recycle drain valves V-2-D-3 and V-2-D-8. _____
- Slowly open demineralizer vent valve V-2-D-16 and recycle outlet valve V-2-D-15. _____

3.2.2 WHEN the demineralizer is drained,
THEN manually close the following valves:

- recycle drains V-2-D-3 and V-2-D-8 _____
- recycle outlet V-2-D-15 _____

3.2.3 Prepare to transfer borated water by opening the following valves:

3.2.3.1 Manually open demineralizer resin inlet valve V-2-D-13. _____

3.2.3.2 Open transfer valves V-2-T-2 and V-2-T-3. _____

3.2.4 Pressurize the cation tank by opening cation tank air inlet valve V-2-C-3. _____

3.2.5 Open cation tank resin outlet valve V-2-C-10 and transfer the borated water to the demineralizer unit. _____

3.2.6 After all borated water has been transferred to the demineralizer, as indicated by J.O. Backwash Panel or local sightglass, close the following valves:

3.2.6.1 Cation tank air inlet V-2-C-3. _____

3.2.6.2 Cation tank resin outlet V-2-C-10. _____

3.2.6.3 Transfer valves V-2-T-2 and V-2-T-3. _____

3.2.6.4 Demineralizer resin inlet V-2-D-13 (manually). _____

3.2.6.5 Demineralizer vent V-2-D-16 (manually). _____

3.2.6.6 Vent header isolation V-2-D-99 (manually). _____

3.3

CAUTION

The amount of time condensate flow is allowed to drop below 2400 gpm should be minimized to ensure adequate cooling flow is maintained to condensate system components.

To prevent loss of boron, isolate the following flow paths using Steps 3.3.1 through 3.3.5.

3.3.1

NOTE

A KA10 Key is required for entry into the Condensate Transfer Building.

Isolate the demineralizer discharge to the Condensate Storage Tank by closing the following valves located in the Condensate Transfer Building.

- V-2-42, Cond. Reject to CST Isolation Valve _____
- V-2-14, Cond. Reject FRV Bypass Valve _____
- V-2-88, Cond. Reject FRV Bypass Valve _____

3.3.2 Isolate the demineralizer discharge to the CRD WATER QUALITY LINE by shutting V-2-122, Flow Control Valve (V-2-124) Inlet Isolation Valve, in the Condenser Bay. _____

3.3.3 Isolate any reactor feedwater strings not required to maintain adequate core cooling by closing their Heater String Outlet Isolation Valves (V-2-10, V-2-11, V-2-12). _____

3.3.4

NOTE

An MB-1 Key is required to complete Step 3.3.4.

Isolate the reactor feed pump minimum flow lines by unlocking and closing V-2-230 (A), 231 (B) and 232 (C), Minimum Flow Isolation Valves, to prevent boron loss. _____

3.3.5 Isolate Turbine Exhaust Hood Spray by shutting V-2-83, Condenser Hood Spray Isolation Valve. (Turbine Bldg Mezzanine) _____

3.4

> NOTE
>
> All valve manipulations in this section must be done manually, as these valves are not operated on the J.O. Backwash MANUAL OPERATION screen.

Place the demineralizer with Borated Water in service in accordance with the following:

3.4.1 Confirm at least one feed string is lined up for injection into RPV with its Condensate Pump running, feed pump running and heater string outlet valve open. _____

3.4.2 Confirm demineralizer inlet valve is cracked open. _____

3.4.3 Vent the demineralizer as follows:

1. Check closed auxiliary vent valve V-2-D-100 and open header vent valve V-2-D-99. _____
2. Insure drain valve V-2-D-3, V-2-D-8 and other demineralizer units recycle valve are closed. _____

3.4.4

> NOTE
>
> Minimize venting of Borated Water from the demineralizer.

> CAUTION
>
> All air must be vented from the demineralizer before placing unit in service.

Verify proper fill and venting of the demineralizer by cracking open the unit vent valve V-2-D-16 until water runs through the vent sight glass. _____

3.4.5 Close the unit's vent valve V-2-D-16 and V-2-D-99 when the demineralizer is filled and vented. _____

3.4.6 Open outlet valve V-2-D-12 to put Condensate Demineralizer in service. _____

3.5 IF additional Boron is required,

THEN repeat Steps 3.1 through 3.4

3.6 IF directed by the GSS,

THEN return system to normal per Procedure 319.

3.7 Return to the J.O. Backwash Main Menu by pressing the HOME key. _____

| GPU NUCLEAR | OYSTER CREEK NUCLEAR GENERATING STATION PROCEDURE | Number EMG-3200.02 |
|---|---|---|
| Title **PRIMARY CONTAINMENT CONTROL** | | Revision No. 15 |
| Applicability/Scope **EMERGENCY OPERATING PROCEDURE FOR OYSTER CREEK** | | Responsible Office **PLANT ENGINEERING 2200** |
| This document is within QA plan scope _X_ Yes ___ No<br>Safety Reviews Required _X_ Yes ___ No | | Effective Date (04/25/00) 05/05/00 |

Prior Revision 14 incorporated the following Temporary Changes:

N/A

This Revision 15 incorporates the following Temporary Changes:

N/A

List of Pages (all pages rev'd to Rev. 15)

1.0 to 4.0
E1-1
E2-1 to E2-2
E3-1 to E3-4
E4-1 to E4-2
E5-1 to E5-2
E6-1 to E6-3
E7-1 to E7-2
E8-1 to E8-3
E9-1 to E9-2
E10-1 to E10-2
E11-1 to E11-2
E12-1 to E12-2
E13-1 to E13-2
E14-1 to E14-6
E15-1 to E15-4
E16-1 to E16-2
E17-1
E18-1 to E18-2
E19-1 to E19-4
E20-1 to E20-3
E21-1 to E21-4
E22-1 to E22-4
E23-1 to E23-2
E24-1 to E24-3
E25-1 to E25-2

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| | | PLANT OPERATIONS DIRECTOR | 4-13-00 |
| Approved By | | VICE PRESIDENT & DIRECTOR, OC | 4-24-00 |

1.0 PURPOSE

The purpose of the Primary Containment Control Procedure is to:

- Protect equipment in the Primary Containment
- Maintain Primary Containment integrity

2.0 REFERENCES

2.1 Procedures

- 107.4, EOP Program Control
- 310
- 312

2.2 Drawings

- BR 2006, Flow Diagram Closed Cooling Water System
- BR 2011, Shts 1 & 2, Flow Diagram - H&V Reactor Bldg
- BR 3017, 460 VAC MCC Elem Diagram Sht 4
- GE 112C2654, Sht 3, Panel 2R Connection Diagram
- GE 157B6350, Shts 117 & 118, RBCCW Valve Elem Diagram
- GE 237E566, Shts 1a, 1b, 2 & 6, Rx Protection System Elem Diagram
- GE 706E841, Vent & Effluent Rad Monitor Elem Diagram
- GU 3D-822-17-1002, Elem Diagram - Standby Gas Treatment System
- GU 3D-822-21-1000, Flow Diagram - Standby Gas Treatment System
- NU 506036003, Shts 1 - 3, Core Spray/RBCCW Drywell Isolation Elem Diagram
- SN 13432.19-1, Flow Diagram - $N_2$ Purge and Makeup Sys
- SN 15361.03-EC-23, Area Rad Monitoring Elem Diagram

2.3 2000-GLN-3200.01, OC Plant Specific Technical Guidelines

2.4 2000-STD-1218.04, EOP Writer's Guide

3.0 PRECAUTIONS AND LIMITATIONS

3.1 This procedure gives guidance to the operator for bypassing isolation signals and automatic scrams which is a departure from the Oyster Creek Technical Specifications. It is permissible to take actions which depart from the plant's Technical Specifications during emergency conditions as authorized by 10 CFR 50.54 (x).

4.0 ATTACHMENTS

4.1 Attachment A - Primary Containment Control EOP Flowchart DWG: GU 3E-200-08-010 sh 1

4.2 Attachment B - Support Procedure 25, Initiation of the Containment Spray System in the Torus Cooling Mode

4.3 Attachment C - Support Procedure 26, Determining Bulk Drywell Temperature

4.4 Attachment D - Support Procedure 27, Maximizing Drywell Cooling

4.5 Attachment E - Support Procedure 28, Level Instrumentation Availability

4.6 Attachment F - Support Procedure 29, Initiation of the Containment Spray System for Drywell Sprays

4.7 Attachment G - Support Procedure 30, Confirmation of Primary Containment Isolation

4.8 Attachment H - Support Procedure 31, Venting Primary Containment to maintain Pressure Below 3.0 psig

4.9 Attachment I - Support Procedure 32, Venting the Torus for Primary Containment High Pressure

4.10 Attachment J - Support Procedure 33, Venting the Drywell for Primary Containment High Pressure

4.11 Attachment K - Support Procedure 34, Venting the Drywell through the Purge System for Primary Containment High Pressure

4.12 Attachment L - Support Procedure 35, Venting the Torus Through the Hardened Vent

4.13 Attachment M - Support Procedure 36, Venting the Drywell Through the Hardened Vent

4.14 Attachment N - Support Procedure 37, Makeup to the Torus via Core Spray System

4.15 Attachment O - Support Procedure 38, Determining Primary Containment Water Level

4.16 Attachment P - Support Procedure 39, Placing the $H_2/O_2$ Monitoring System In Service

4.17 Attachment Q - Support Procedure 40, Isolation of the Primary Containment Vent and Purge Valves

4.18 Attachment R - Support Procedure 41, Venting the Torus for Hydrogen Control

4.19 Attachment S - Support Procedure 42, Purging the Drywell for Hydrogen Control

4.20 Attachment T - Support Procedure 43, Venting the Drywell for Hydrogen Control (Level Below 461 in)

4.21 Attachment U - Support Procedure 44, Venting the Drywell through the Rx Building Supply Fans for Hydrogen Control (Level Above 461 in)

4.22 Attachment V - Support Procedure 45, Purging the Torus for Hydrogen Control

4.23 Attachment W - Support Procedure 46, Venting the Torus for Hydrogen Control

4.24 Attachment X - Support Procedure 47, Venting the Drywell for Hydrogen Control (Level Below 461 in)

4.25 Attachment Y - Support Procedure 48, Venting the Drywell for Hydrogen Control

ATTACHMENT A

Attachment A to EMG-3200.02, Primary Containment Control, is the Primary Containment Control EOP Flowchart,

DWG: GU 3E-200-08-010 Sht 1, Rev. 3

# SUPPORT PROCEDURE 25

INITIATION OF THE CONTAINMENT SPRAY SYSTEM IN THE TORUS COOLING MODE

1.0 PREREQUISITES

Initiation of the Containment Spray System in the Torus Cooling Mode has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

> CAUTION
>
> Containment Spray suction strainer plugging may occur due to debris in the Primary Containment and result in a loss of Containment Spray System Flow.

3.1

> CAUTION
>
> Diesel Generator overload will result if a Containment Spray Pump and ESW pump are started with a Diesel Generator load of greater than 2150 KW.

IF Bus 1C or 1D are being supplied by an Emergency Diesel Generator,

THEN verify that adequate load margin is available so as NOT to exceed EDG load limit when starting Containment Spray and ESW Pumps.

3.2

> CAUTION
>
> NPSH problems will develop on all operating pumps if more than 4 Containment Spray/Core Spray Main pumps are operated at the same time.

IF 4 Containment Spray/Core Spray Main pumps are in operation,

THEN do not start additional Containment Spray pumps until Core Spray Main pumps can be secured.

3.3 Start a Containment Spray Pump as follows:

3.3.1 Select the Containment Spray System to be used by confirming either SYSTEM 1 MODE SELECT or SYSTEM 2 MODE SELECT switch in TORUS CLG position. _____

3.3.2 Select a Containment Spray Pump to be started.

3.3.3 Place and hold the System Pump Start Permissive Keylock for the selected pump in the appropriate position (Panel 1F/2F).

3.3.4 Start the selected Containment Spray Pump using its control switch (Panel 1F/2F). _____

3.4 Start an associated ESW Pump using its control switch (Panel 1F/2F). _____

3.5 Monitor system parameters for expected performance. _____

3.6 Start additional Containment Spray and ESW Pumps as directed by the GSS/GOS in accordance with Steps 3.1 thru 3.5. _____

3.7 IF all Containment Spray pumps that are running are not required for Torus cooling,

THEN inform the GSS/GOS and secure the Containment Spray pumps that are not required for Torus cooling.

# SUPPORT PROCEDURE 26

## DETERMINING BULK DRYWELL TEMPERATURE

1.0 PREREQUISITES

Determination of Bulk Drywell Temperature has been directed by the Emergency Operating Procedures.

2.0 PREPARATIONS

None

3.0 PROCEDURE

IF computer point DWTEMP is unavailable or questionable ("Q" for point health),

THEN determine drywell bulk temperature by using the appropriate calculation and the following recorders:

- Recorder IA55 (Panel 8R)
- Recorder TR-100A (RB 51' Elev.)

3.1 Complete Calculation on Attachment DWT-1.1.

3.2 Calculate Bulk Drywell Temperature (TB) using values from Attachment DWT-1.1.

$$TB = 0.503 \frac{\quad}{(T\ Avg\ I_A)} + 0.382 \frac{\quad}{(T\ Avg\ I_B)} +$$

$$0.076 \frac{\quad}{(T\ Avg\ II)} + 0.039 \frac{\quad}{(T\ Avg\ III)}$$

$$TB = \frac{\quad}{\quad}$$

3.2.1 IF temperature recorder IA55 is not available,

THEN calculate bulk drywell temperature using the following equation:

$$TB = 0.885 \frac{\quad}{(T\ Avg\ I_B)} + 0.076 \frac{\quad}{(T\ Avg\ II)}$$

$$+ 0.039 \frac{\quad}{(T\ Avg\ III)}$$

NOTE

Thermocouple readings ≥ 395°F must be read using Plant Computer Points or by an instrument technician using instrumentation for Type T thermocouples.

3.2.2 IF any T/C 105 indicates ≥395°F,

THEN check T/C 107 reading for confirmation of high temperature conditions.

3.2.3 IF two out of three T/C 105's indicate 315°F ≤ T > 325°F,

THEN evaluate drywell cooling using Procedure OPS-3024.09, Drywell Cooling System - Diagnostic and Restoration Actions.

3.2.4 IF two out of three T/C 105's indicate T ≥ 325°F,

THEN initiate a plant shutdown in accordance with Procedure 203.1, Plant Shutdown to Hot Standby.

3.3 IF bulk drywell temperature cannot be determined using the plant computer,

AND an operator is not immediately available to monitor Drywell temperature at 51' elev. OR Temperature Recorder TR-100A is not available,

THEN determine bulk drywell temperature by averaging the inlet temperatures of the operating Drywell Recirc. Fans. (Points 11, 12, 13, 14, and 15 from recorder IA55 on Panel 8R).

3.3.1 IF less than three Drywell Recirc Fans are running,

THEN calculate bulk drywell temperature by averaging the temperatures of the GEMAC narrow and wide range reference legs (Points 40, 41, and 42 from recorder IA55 on Panel 8R).

ATTACHMENT DWT-1.1

Temperature readings from the following thermocouples can be obtained locally from the recorder or from the plant computer by identified ID points.

NOTE

Thermocouple readings ≥395°F must be read using Plant Computer Points or by an instrument technician using instrumentation for Type T thermocouples.

1. IF one thermocouple reading is not available (i.e.; downscale or upscale)

   THEN remove it from the T Avg calculation and decrease the denominator by one number.

2. Calculate T Avg $I_A$ by completing the following:

   - From Recorder IA55 (Panel 8R) or the Plant Computer, record the following data:

| Recorder Point | COMP ID PT | Value (°F) |
|---|---|---|
| PT.35 = TE-100A,El. 33' Recirc Pump Motor Inlet Air "A" | 'TE100A' | _____ |
| PT.36 = TE-100B,El. 33' Recirc Pump Motor Inlet Air "B" | 'TE100B' | _____ |
| PT.37 = TE-100C,El. 33' Recirc Pump Motor Inlet Air "C" | 'TE100C' | _____ |
| PT.38 = TE-100D,El. 33' Recirc Pump Motor Inlet Air "D" | 'TE100D' | _____ |
| PT.39 = TE-100E,El. 33' Recirc Pump Motor Inlet Air "E" | 'TE100E' | _____ |

   - Calculate T Avg $I_A$

$$\text{T Avg } I_A = \frac{PT.35 + PT.36 + PT.37 + PT.38 + PT.39}{5} = \_\_\_\_\_ °F$$

3. Calculate T Avg $I_B$ by completing the following:

   - From Recorder TR-100A (RB 51' Elev.) or the Plant Computer, record the following data:

| Recorder Point | COMP ID PT | Value (°F) |
|---|---|---|
| PT.1 = TE-103A,El. 50' Safety Valve Area | 'TE103A' | _____ |
| PT.2 = TE-103B,El. 50' Safety Valve Area | 'TE103B' | _____ |
| PT.3 = TE-103C,El. 50' Safety Valve Area | 'TE103C' | _____ |
| PT.4 = TE-103D,El. 50' Safety Valve Area | 'TE103D' | _____ |
| PT.5 = TE-103E,El. 50' Safety Valve Area | 'TE103E' | _____ |

   - Calculate T Avg $I_B$

$$\text{T Avg } I_B = \frac{PT.1 + PT.2 + PT.3 + PT.4 + PT.5}{5} = \_\_\_\_\_ °F$$

4. Calculate T Avg II by completing the following:

   - From Recorder TR-100A (RB 51' Elev.) or the Plant Computer, record the following data:

| Recorder Point | COMP ID PT | Value (°F) |
|---|---|---|
| PT.6 = TE-104A,El. 93' Rx Vessel Bellows Seal Area | 'TE104A' | _____ |
| PT.7 = TE-104B,El. 93' Rx Vessel Bellows Seal Area | 'TE104B' | _____ |
| PT.8 = TE-104C,El. 93' Rx Vessel Bellows Seal Area | 'TE104C' | _____ |
| PT.9 = TE-104D,El. 93' Rx Vessel Bellows Seal Area | 'TE104D' | _____ |
| PT.10 = TE-104E,El. 93' Rx Vessel Bellows Seal Area | 'TE104E' | _____ |

   - Calculate T Avg II

$$\text{T Avg II} = \frac{PT.6 + PT.7 + PT.8 + PT.9 + PT.10}{5} = \_\_\_\_\_ °F$$

5. Calculate T Avg III by completing the following:

   - From Recorder TR-100A (RB 51' Elev.) or the Plant Computer, record the following data:

| Recorder Point | COMP ID PT | Value (°F) |
|---|---|---|
| PT.11 = TE-105A,El. 95' Rx Head Flange Area | 'TE105A' | _____ |
| PT.12 = TE-105B,El. 95' Rx Head Flange Area | 'TE105B' | _____ |
| PT.13 = TE-105C,El. 95' Rx Head Flange Area | 'TE105C' | _____ |

   - Calculate T Avg III

$$\text{T Avg III} = \frac{PT.11 + PT.12 + PT.13}{3} = \_\_\_\_\_ °F$$

# SUPPORT PROCEDURE 27

MAXIMIZING DRYWELL COOLING

1.0 PREREQUISITES

The operation of all available drywell coolers has been directed by the Emergency Operating Procedures AND the RBCCW System is NOT isolated due to a LOCA or MSLB in the Drywell.

2.0 PREPARATION

2.1

> NOTE
>
> After completing the following steps, valves V-5-147, V-5-166 and V-5-167 will only operate from the Control Room. All automatic operation is removed.

In the rear of Panel 2R, open the EOP BYPASS PLUGS panel.

2.1.1 Remove the bypass plug from position BP1. _____

2.1.2 Remove the bypass plug from position BP2. _____

3.0 PROCEDURE

3.1

> CAUTION
>
> Reinitiating RBCCW flow to the Drywell following a LOCA or MSLB in the Drywell may cause a water hammer to occur and subsequent piping failure.

Verify that the RBCCW System is not isolated due to high Drywell pressure/low RPV water level conditions.

3.2 IF the RBCCW System is isolated due to high Drywell pressure/low RPV water level,

THEN inform the Licensed Operations Supervisor and do not attempt to reinitiate the RBCCW System flow to the Drywell.

3.3 Confirm open RBCCW Isolation Valves (Panel 1F/2F)

- V-5-147 _____
- V-5-166 _____
- V-5-167 _____
- V-5-148 _____

3.4 Start all available DW RECIRC FANS by placing their respective control switches in ON (Panel 11R). _____

3.5 Place the ISOL SIGNAL BYPASS V-6-395 switch in BYPASS position (Panel 11F). _____

3.6

CAUTION

A rapid decrease in Drywell temperature could cause a corresponding drop in Drywell Pressure and possible deinertion.

Operate DW RECIRC FANS (Panel 11R) as required to control Drywell temperature.

# SUPPORT PROCEDURE 28

LEVEL INSTRUMENTATION AVAILABILITY

1.0 PREREQUISITES

The evaluation of RPV Water Level Instruments has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

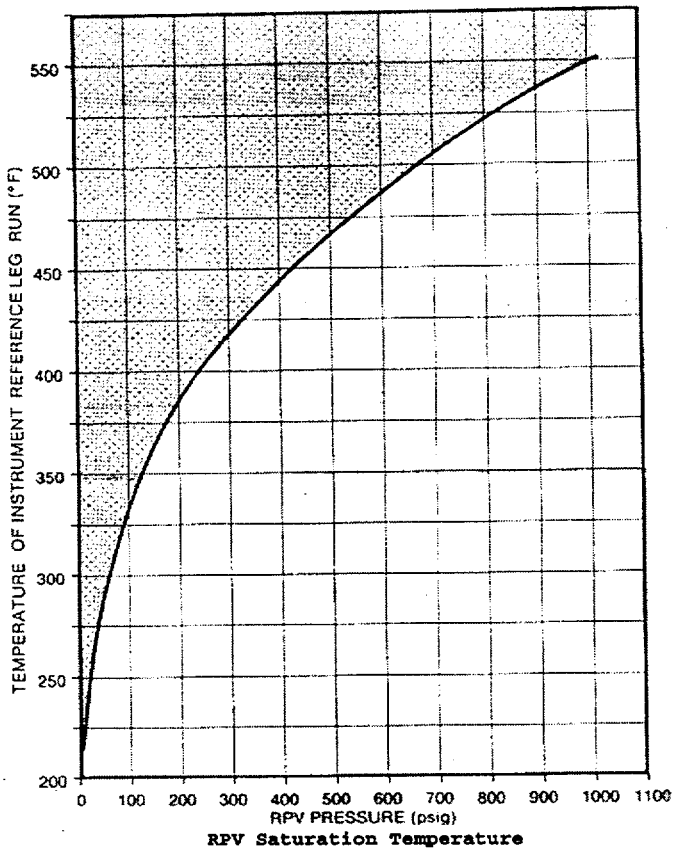
None

3.0 PROCEDURE

An RPV water level instrument may be used to determine RPV water level only when all the following conditions are satisfied for that instrument.

3.1 Verify that the temperatures of the following instrument reference leg vertical runs as read on recorder TR-IA55 on Panel 8R are below RPV saturation temperature.

| Level Instrument | Temp Instrument No. | Recorder Point | Temperature |
|---|---|---|---|
| NR GEMAC A (LT-1D13A) | TE-130-450 | 40 | _____ |
| NR GEMAC B (LT-1D13B) | TE-130-451 | 41 | _____ |
| WR GEMAC (LT-1A12) | TE-130-452 | 42 | _____ |
| YARWAY A (LT-RE05/19A) | TE-130-453 | 43 | _____ |
| YARWAY B (LT-RE05/19B) | TE-130-454 | 44 | _____ |




3.2 For each instrument below, the instrument reads above the minimum indicated level or the reference leg temperature is below the maximum run temperature.

| | |
|---|---|
| GEMAC NARROW RANGE<br>(90 - 180 in.) | Indicated level above 104 in.<br>OR<br>Ref. leg temperature below 420°F |
| YARWAY<br>(85 - 185 in.) | Indicated level above 100 in.<br>OR<br>Ref. leg temperature below 460°F |
| GEMAC WIDE RANGE<br>(100 - 700 in.) | Indicated level is greater than the value listed for the reference leg temperature.<br>Ref Leg Temp. — Indicated Level<br>40 - 200°F — Above 100 in.<br>200 - 300°F — Above 120 in.<br>300 - 400°F — Above 140 in.<br>400 - 500°F — Above 170 in.<br>500 - 550°F — Above 190 in. |

# SUPPORT PROCEDURE 29

INITIATION OF THE CONTAINMENT SPRAY SYSTEM FOR DRYWELL SPRAYS

1.0 PREREQUISITES

Manual initiation of Drywell Sprays has been directed by the Emergency Operating Procedures. _____

2.0 PREPARATION

2.1 Select the Containment Spray System to be used by confirming either SYSTEM 1 MODE SELECT or SYSTEM 2 MODE SELECT switch in DW SPRAY position (Panel 1F/2F). _____

2.2 Verify that the system TORUS CLG DISCHARGE valve closes and DW SPRAY DISCHARGE valve opens (Panel 1F/2F). _____

3.0 PROCEDURE

> CAUTION
>
> Containment Spray suction strainer plugging may occur due to debris in the Primary Containment and result in a loss of Containment Spray System Flow.

3.1

> CAUTION
>
> Diesel Generator overload will result if a Containment Spray pump and ESW pump are started with a Diesel Generator load of greater than 2160 KW.

IF Bus 1C or 1D are being supplied by an Emergency Diesel Generator,

THEN verify that adequate load margin is available so as NOT to exceed EDG load limit when starting Containment Spray and ESW pumps. _____

3.2 WHEN directed to initiate Drywell sprays,

THEN complete the following:

1. Confirm the Reactor Recirculation Pumps tripped (Panel 3F). _____

2. Confirm the Drywell Recirc Fans tripped (Panel 11R). _____

3.3

> CAUTION
>
> NPSH problems will develop on all operating pumps if more than 4 Containment Spray/Core Spray Main pumps are operated at the same time.

IF 4 Containment Spray/Core Spray Main pumps are in operation,

THEN do not start additional Containment Spray pumps until Core Spray Main pumps can be secured. _____

3.4 Start a Containment Spray Pump as follows:

3.4.1 Select a Containment Spray Pump to be started.

3.4.2 Place and hold the System Pump Start Permissive Keylock for the selected pump in the appropriate position (Panel 1F/2F). _____

3.4.3 Start the selected Containment Spray Pump using its control switch (Panel 1F/2F). _____

3.5 Start an associated ESW Pump using its control switch (Panel 1F/2F). _____

3.6 Monitor System parameters for expected performance.

3.7

> NOTE
>
> Valves V-5-147, 166 and 167 do not seal in when the control switch is taken to close. The control switch must be held in close until the valve indicates closed.

Confirm the following RBCCW Isolation valves closed (Panel 1F/2F):

- V-5-147 _____
- V-5-148 _____
- V-5-166 _____
- V-5-167 _____

3.8

CAUTION

Diesel generator overload will result if a containment spray pump and ESW pump are started with a diesel generator load of greater than 2160 KW.

Start additional Containment Spray and ESW Pumps in accordance with Steps 3.3 through 3.6 as directed by the GSS/GOS.

3.9 Maintain primary containment pressure in a band of 4 to 12 psig unless otherwise directed by the GSS/GOS as follows:

3.9.1 Secure drywell sprays when drywell pressure drops to 4 psig.

3.9.2 WHEN Torus pressure increases to 12 psig,
THEN initiate drywell sprays in accordance with Steps 3.3 through 3.6.

3.10 IF any Core Spray Booster pump is running
AND
Torus OR Drywell pressure drops to 2 psig,
THEN confirm termination of Drywell Sprays. _____

3.11 IF no Core Spray Booster pump is running
AND
Torus OR Drywell pressure drops below 1 psig,
THEN confirm termination of Drywell Sprays. _____

3.12 IF Containment Spray Pumps fail to trip,
THEN place the respective system MODE SELECT switch in TORUS CLG position. _____

# SUPPORT PROCEDURE 30

CONFIRMATION OF PRIMARY CONTAINMENT ISOLATION

1.0 PREREQUISITES

Confirmation of Primary Containment isolation has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Confirm closed the following valves that are not required to be open by the Emergency Operating Procedures:

| System | Valve No. | | |
|---|---|---|---|
| DW Vent/Purge | V-27-1 | (Panel 11F) | _____ |
| | V-27-2 | " | _____ |
| | V-27-3 | " | _____ |
| | V-27-4 | " | _____ |
| Torus Vent | V-28-17 | (Panel 11F) | _____ |
| | V-28-18 | " | _____ |
| Torus 2" Vent Bypass | V-28-47 | (Panel 11F) | _____ |
| DWEDT | V-22-1 | (Panel 11F) | _____ |
| | V-22-2 | " | _____ |
| DW Floor Sump | V-22-28 | (Panel 11F) | _____ |
| | V-22-29 | " | _____ |
| Torus/Rx Bldg. Vacuum Breakers | V-26-16 | (Panel 11F) | _____ |
| | V-26-18 | " | _____ |
| TIP Valves | Common Ind. | (Panel 11F) | _____ |

| | | | |
|---|---|---|---|
| DW 2" Vent Bypass | V-23-21 | (Panel 12XR) | _____ |
| | V-23-22 | " | _____ |
| $N_2$ Purge | V-23-13 | (Panel 12XR) | _____ |
| | V-23-14 | " | _____ |
| | V-23-15 | " | _____ |
| | V-23-16 | " | _____ |
| $N_2$ Makeup | V-23-17 | (Panel 12XR) | _____ |
| | V-23-18 | " | _____ |
| | V-23-19 | " | _____ |
| | V-23-20 | " | _____ |

# SUPPORT PROCEDURE 31

## VENTING THE PRIMARY CONTAINMENT TO MAINTAIN PRESSURE BELOW 3.0 PSIG

1.0 PREREQUISITES

Venting of the Primary Containment has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 IF the GSS/GOS directs usage of SGTS for venting,

THEN perform the following:

1. Select a SGTS Train for operation by placing the STANDBY GAS SELECT switch in position SYSTEM 1 or SYSTEM 2. _____
2. Place the fan control switch for the train selected in the HAND position. _____
3. Close the SGTS CROSSTIE V-28-48 (Panel 11R) _____
4. Secure operating Reactor Building Supply Fans by placing the respective control switches in OFF position (Panel 11R). _____
5. Immediately secure Exhaust Fan EF 1-5 (or EF 1-6) by placing control switch in STOP position (Panel 11R). _____
6. Close V-28-21 and V-28-22 by placing the EXH VALVES TO MAIN EXHAUST control switch in CLOSE position. _____
7. Close V-28-42 and V-28-43 by placing the MAIN SUPPLY HEADER VALVES TO DW control switch in CLOSE position. _____
8. Open Torus Vent Valve V-28-18 (Panel 11F). _____

9. Cycle V-28-47 to maintain Drywell pressure below 3.0 psig (Panel 11F). _____

10. IF the Torus cannot be vented,
THEN perform the following:
    a. Inform the GSS/GOS. _____
    b. Open the Drywell vent valve V-23-21 (Panel 12XR). _____
    c. Cycle Drywell vent valve and V-23-22 (Panel 12XR) to maintain Drywell pressure below 3.0 psig. _____

11. WHEN the primary containment is being vented through SGTS,
THEN perform the following:
    a. Notify Chemistry that Rx Bldg. ventilation has been secured so that they can shift the stack RAGEMS DEFAULT SYSTEM CONTROL switch to DEFEAT. _____
    b. Confirm that the final SGTS lineup has the preferred system in operation, and V-28-48, SGTS CROSSTIE DAMPER is closed. _____
    c. Confirm running Turbine Building Exhaust Fan EF 1-7 or one Radwaste Bldg. Exhaust Fan, EF 1-16 or EF 1-17, to maintain a minimum stack flowrate/exit velocity of 50 fpm. _____

3.2 IF the GSS/GOS directs usage of Rx. Bldg. ventilation for venting,

THEN perform the following:

1. Open Torus Vent valve V-28-18 (Panel 11F). _____
2. Cycle Torus Vent valve V-28-47 (Panel 11F) to maintain Drywell pressure below 3.0 psig.
3. IF the Torus cannot be vented,

   THEN perform the following:

   a. Inform the GSS/GOS. _____
   b. Open the Drywell vent valve V-23-21 (Panel 12XR). _____
   c. Cycle Drywell vent valve and V-23-22 (Panel 12XR) to maintain Drywell pressure below 3.0 psig. _____

# SUPPORT PROCEDURE 32

VENTING THE TORUS FOR PRIMARY CONTAINMENT HIGH PRESSURE

1.0 PREREQUISITES

Torus venting has been directed by the Emergency Operating Procedures. _____

2.0 PREPARATION

Perform the following steps in preparation for venting the Torus via the Reactor Building ventilation system.

2.1 Verify Torus water level is below 348 in. (Panel 1F/2F) _____

2.2 Evacuate personnel from the Reactor Building.

2.2.1 Sound the Reactor Building Evacuation Alarm _____ Time

2.2.2 Make the announcement "Primary Containment Venting will commence in approximately 5 minutes. All personnel evacuate the Reactor Building immediately. Stand clear of the Stack and the Rx. Bldg. Fan Pad." _____

2.3 Select a SGTS Train for operation and place its fan control switch in HAND (Panel 11R). _____

2.4 Place the control switch for V-28-48, SGTS CROSSTIE, in CLOSED (Panel 11R). _____

2.5 Confirm Reactor Building Supply Fans secured (Panel 11R). _____

2.6 Confirm Reactor Building Exhaust Fan secured (Panel 11R). _____

2.7 Confirm that the Reactor Mode Selector Switch is NOT in the RUN position. _____

2.8 Obtain one (1) bypass plug from the EOP Tool Box in the Control Room. _____

2.9

> CAUTION
>
> The containment isolation function of the following valves is bypassed when the High Drywell Pressure and Reactor Low-Low Water Level isolation signals are defeated:
>
> - Drywell Nitrogen Makeup Valves (V-23-17 and V-23-18)
> - Torus Nitrogen Makeup Valves (V-23-19 and V-23-20)

Open the EOP BYPASS PLUGS panel in the rear of Panel 10XF.

2.9.1 Insert a bypass plug in position BP5. _____

2.10 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.10.1 Remove the bypass plug in position BP4. _____

2.10.2 Insert a bypass plug in position BP1. _____

2.11 Place the TORUS/DRYWELL ISOLATION VALVE BYPASS PERMISSIVE keylock switch in the TORUS position (Panel 11F). _____

2.12 Place the TORUS/DW VENT AND PURGE ISOL VLVS HI RAD BYP keylock switches for both Channels 1 & 2 in the BYPASS position (Panel 11F). _____

2.13 Inform GSS/GOS that the Torus is ready to be vented via the Torus Vent valves. _____

3.0 PROCEDURE

When directed by the GOS/GSS, complete the following:

3.1 Reset the Reactor Building Ventilation System by momentarily depressing the system RESET pushbutton (Panel 11R). _____

3.2 Confirm open Reactor Building Main Exhaust Isolation valves V-28-21 and V-28-22 (Panel 11R). _____

3.3 WHEN at least five minutes has passed since sounding the Reactor Building evacuation alarm,

THEN inform the GSS/GOS,

AND

start Reactor Building Exhaust Fan 1-5. _____

3.4 Open Torus Vent valves V-28-18 and V-28-47 (Panel 11F). _____

3.5 Inform the GSS/GOS that Torus venting via V-28-18 and V-28-47 has commenced. _____

3.6 Control Torus pressure as directed by the GSS/GOS by cycling the Torus vent valves as required.

3.7

> CAUTION
>
> Ventilation ductwork failure can occur when venting through V-28-17 with torus pressure greater than 2 psig.

WHEN directed by the GSS/GOS,

THEN open torus vent valve V-28-17 (Panel 11F). _____

3.8 Control Torus pressure as directed by the GSS/GOS by cycling Torus Vent valves as required.

# SUPPORT PROCEDURE 33

VENTING THE DRYWELL FOR PRIMARY CONTAINMENT HIGH PRESSURE

1.0 PREREQUISITES

Drywell venting has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for venting the Drywell via the Reactor Building ventilation system.

2.1 Verify Primary Containment water level is below 461 in. _____

2.2 Evacuate personnel from the Reactor Building.

2.2.1 Sound the Reactor Building Evacuation Alarm. _____ Time

2.2.2 Make the announcement "Primary Containment Venting will commence in approximately five minutes. All personnel evacuate the Reactor Building immediately. Stand clear of the Stack and the Rx. Bldg. Fan Pad." _____

2.3 Select a SGTS Train for operation and place its fan control switch in HAND (Panel 11R). _____

2.4 Place the control switch for V-28-48, SGTS CROSSTIE, in CLOSED (Panel 11R). _____

2.5 Confirm Reactor Building Supply Fans secured (Panel 11R). _____

2.6 Confirm Reactor Building Exhaust Fan secured (Panel 11R). _____

2.7 Confirm that the Reactor Mode Selector is NOT in the RUN position. _____

2.8 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.8.1 Remove the bypass plug in position BP4. _____

2.8.2 Insert the bypass plug in position BP1. _____

2.9 Place the TORUS/DRYWELL ISOLATION VALVE BYPASS PERMISSIVE keylock switch in the DRYWELL position (Panel 11F). _____

2.10 Inform the GSS/GOS that the Drywell is ready to be vented via the Drywell 2 inch Vent valves. _____

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

3.1 Reset the Reactor Building Ventilation System by momentarily depressing the system RESET pushbutton (Panel 11R). _____

3.2 Confirm open Reactor Building Main Exhaust Isolation valves, V-28-21 and V-28-22 (Panel 11R). _____

3.3 WHEN at least five minutes has passed since sounding the Reactor Building evacuation alarm,

THEN inform the GSS/GOS,

AND

start Reactor Building Exhaust Fan 1-5. _____

3.4 Open Drywell Vent valves V-23-21 and V-23-22 (Panel 12XR). _____

3.5 Control Drywell pressure as directed by the GSS/GOS by cycling V-23-21 or V-23-22.

# SUPPORT PROCEDURE 34

VENTING THE DRYWELL THROUGH THE PURGE SYSTEM FOR PRIMARY CONTAINMENT HIGH PRESSURE

1.0 PREREQUISITES

Drywell venting through the Purge System has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for venting the Drywell via the Drywell Purge System and Reactor Building Ventilation System.

2.1 Evacuate personnel from the Reactor Building.

2.1.1 Sound the Reactor Building Evacuation Alarm. _____ Time

2.1.2 Make the announcement "Primary Containment Venting will commence in approximately five minutes. All personnel evacuate the Reactor Building immediately. Stand clear of the Stack and the Rx. Bldg. Fan Pad." _____

2.2 Select a SGTS Train for operation and place its fan in HAND (Pnl 11R) _____

2.3 Place Control switch for V-28-48, SGTS CROSSTIE, to the CLOSED position (Panel 11R). _____

2.4 Confirm Reactor Building Supply Fans are secured (Panel 11R). _____

2.5 Confirm Reactor Building Exhaust Fan secured (Panel 11R). _____

2.6 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.6.1 Remove the bypass plug from position BP4. _____

2.6.2 Insert the bypass plug into position BP1. _____

2.7

> CAUTION
>
> The containment isolation function of the following valves is bypassed when the CNTMT VENT AND PURGE ISOLATION BYPASS Keylock is in the BYPASS position:
> - Drywell Ventilation Isolation Valves (V-27-1,2,3 and 4).
> - Drywell Nitrogen Purge Inlet Valves (V-23-13 & V-23-14).
> - Torus Nitrogen Purge Inlet Valves (V-23-15 & V-23-16).

Place the CNTMT VENT AND PURGE ISOLATION BYPASS Keylock in BYPASS (Panel 12XR). _____

2.8 Place the TORUS/DW VENT AND PURGE VLVS ISOL HI RAD BYPASS Keylock switches for both channels 1 and 2 in the BYPASS position (Panel 11F). _____

2.9 Confirm that the Torus to Reactor Building Vacuum Breaker (Absorp Cham Vac Rel V-26-16 and 18) control switch is in CLOSE position (Panel 11F). _____

2.10 Inform the GSS/GOS that the Drywell is ready to be vented via the Drywell Purge valves. _____

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

3.1 Reset the Reactor Building Ventilation System by momentarily depressing the system RESET pushbutton (Panel 11R). _____

3.2 Confirm open Reactor Building Main Exhaust Isolation Valves V-28-21 and V-28-22 (Panel 11R). _____

3.3 WHEN at least five minutes has passed since sounding the Reactor Building evacuation alarm,

THEN Inform the GSS/GOS,

AND

start Reactor Building Exhaust Fan 1-5 (Panel 11R). _____

3.4 Confirm closed Drywell Air Supply Valves V-28-42 and V-28-43 (Panel 11R). _____

3.5

| CAUTION |
| --- |
| Ventilation ductwork failure WILL occur when venting through V-27-3 and V-27-4 with Drywell pressure greater than 2 psig. |

Open Drywell Purge Valve V-27-3 and V-27-4 (Panel 11F). _____

3.6 Control Drywell pressure as directed by the GSS/GOS, by cycling V-27-3 as required. _____

# SUPPORT PROCEDURE 35

VENTING THE TORUS THROUGH THE HARDENED VENT

1.0 PREREQUISITES

Torus venting through the hardened vent has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

2.1 This procedure requires the use of an MB-1 key.

2.2 Verify Torus level is less than 348 in. _____

2.3 Verify Primary Containment $H_2$ concentration is below 1.5%. _____

2.4 Verify CNTMT HI RANGE RAD MONITOR Channels 1 and 2 are reading below 2 x $10^4$ R/HR (Panel 2R). _____

2.5 Confirm at least one exhaust fan; 1-5, 1-6, or 1-7 (Panel 11R) is running. _____

2.6 Confirm $N_2$ purge isolation valve V-23-195 closed (Outside Rx. Bldg., NE Corner). _____

2.7 Unlock and close $N_2$ purge inlet valve V-23-357 (Outside Rx. Bldg. NE Corner) _____

2.8 Unlock and open the hardened vent stack isolation valve V-23-358 (Outside Rx. Bldg., NE Corner) _____

2.9 Inform the GSS/GOS that the Torus is ready to be vented through the hardened vent. _____

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

3.1 Make the following announcement: "PRIMARY CONTAINMENT VENTING IS ABOUT TO COMMENCE THROUGH THE HARDENED VENT. ALL PERSONNEL STAND CLEAR OF THE RX. BLDG. FAN PAD, THE STACK AND THE RCA YARD, NORTH AND EAST OF THE RX. BLDG." _____

3.2

CAUTION

The containment isolation function of the following valves is bypassed when the CNTMT VENT AND PURGE ISOLATION BYPASS keylock is in the BYPASS position:

- Drywell Ventilation Isolation Valves (V-27-1, 2, 3, and 4).
- Drywell Nitrogen Purge Inlet Valves (V-23-13 & V-23-14).
- Torus Nitrogen Purge Inlet Valves (V-23-15 & V-23-16).

Place the CNTMT VENT AND PURGE ISOLATION BYPASS keylock in BYPASS (Panel 12XR). _____

3.3 Open Torus nitrogen purge inlet valves V-23-15 and V-23-16 (Panel 12XR). _____

3.4 Inform the GSS/GOS that Torus venting has begun. _____

3.5 Control Torus pressure as directed by cycling V-23-16 (Panel 12XR).

# SUPPORT PROCEDURE 36

VENTING THE DRYWELL THROUGH THE HARDENED VENT

1.0 PREREQUISITES

Drywell venting through the hardened vent has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

2.1 This procedure requires the use of an MB-1 key. _____

2.2 Verify Primary Containment $H_2$ concentration is below 1.5%. _____

2.3 Verify CNTMT HI RANGE RAD MONITOR Channels 1 and 2 are reading below 2 x $10^4$ R/HR (Panel 2R). _____

2.4 Confirm at least one exhaust fan; 1-5, 1-6, or 1-7 (Panel 11R) is running. _____

2.5 Confirm $N_2$ purge isolation valve V-23-195 closed (Outside Rx. Bldg. NE Corner). _____

2.6 Unlock and close $N_2$ purge inlet valve V-23-357 (Outside Rx. Bldg. NE Corner) _____

2.7 Unlock and open the hardened vent stack isolation valve V-23-358 (Outside Rx. Bldg., NE Corner) _____

2.8 Inform the GSS/GOS that the Drywell is ready to be vented through the hardened vent. _____

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

3.1 Make the following announcement: "PRIMARY CONTAINMENT VENTING IS ABOUT TO COMMENCE TROUGH THE HARDENED VENT. ALL PERSONNEL STAND CLEAR OF THE RX. BLDG. FAN PAD, THE STACK AND THE RCA YARD, NORTH AND EAST OF THE RX. BLDG." _____

3.2

CAUTION

The containment isolation function of the following valves is bypassed when the CNTMT VENT AND PURGE ISOLATION BYPASS keylock is in the BYPASS position:

- Drywell Ventilation Isolation Valves (V-27-1, 2, 3, and 4).
- Drywell Nitrogen Purge Inlet Valves (V-23-13 & V-23-14).
- Torus Nitrogen Purge Inlet Valves (V-23-15 & V-23-16).

Place the CNTMT VENT AND PURGE ISOLATION BYPASS keylock in BYPASS (Panel 12XR). _____

3.3 Open Drywell nitrogen purge inlet valves V-23-13 and V-23-14 (Panel 12XR). _____

3.4 Inform the GSS/GOS that Drywell venting has begun. _____

3.5 Control Drywell pressure as directed by cycling V-23-14.

# SUPPORT PROCEDURE 37

MAKEUP TO THE TORUS VIA CORE SPRAY SYSTEM

1.0 PREREQUISITES

1.1 Makeup to the Torus via the Core Spray System has been directed by the Emergency Operating Procedures.

1.2 One Core Spray System is available and not required to assure adequate core cooling.

1.3 The Reactor Building is accessible.

2.0 PREPARATION

2.1 IF Core Spray actuating signals are present,

THEN override Core Spray initiation logic by depressing the OVERRIDE switches for all the sensors that are lit and depressing all ACTUATED switches, whether lit or unlit.

2.2 An MB-1 key is required if lining up the CST as source of Torus water makeup.

3.0 PROCEDURE

3.1

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 1 has been designated to be used,

THEN Perform the following:

3.1.1 Confirm stopped the Core Spray Main and Booster Pumps in Core Spray System 1 (Panel 1F/2F). _____

3.1.2 Close Core Spray System 1 Suction valves V-20-3 and V-20-32 (Panel 1F/2F). _____

3.1.3 Confirm closed Core Spray System 1 Parallel Isolation valves V-20-15 and V-20-40 (Panel 1F/2F). _____

3.1.4 IF the NW Corner Room is accessible,

AND

the CST is the source of Torus water makeup,

THEN perform the following:

1. Place the breakers for Core Spray Pump Suction Valves V-20-3 and V-20-32 in the OFF position.
   - V-20-3 Bkr. (MCC 1A21A/RB 23 SW) _____
   - V-20-32 Bkr. (MCC 1B21A/RB 23 NE) _____
2. Unlock and open the following CST supply valves:
   - V-20-1 (NW Corner Room) _____
   - V-20-5 (NW Corner Room) _____
   - V-20-34 (NW Corner Room) _____
3. Start Core Spray System 1 Main Pump NZ01A or NZ01C. _____

3.1.5 IF the NW Corner Room is NOT accessible,

THEN perform the following to use fire water as the source of Torus water makeup:

1. Close Tell-Tale Drain Valve V-20-91 (North Side RB). _____
2. Start the Diesel Fire Pumps by placing their switches in MAN position (Panel 13R). _____
3. Open Fire Protection Supply Valve V-20-83 (North Side RB). _____
4. Place Core Spray System 1 Main Pump control switches in the PULL-TO-LOCK position (Panel 1F/2F). _____

3.1.6 Unlock and place the breaker for Torus Test Flow Return Valve V-20-27 in the ON position (MCC 1A21B/RB 23 E). _____

3.1.7 Open Test Flow Return valve V-20-27 (Keylock RB 51'NW). _____

3.1.8 WHEN Torus level is greater than 143 in. but less than 154 in.,

THEN perform the following:

1. IF the CST was the source of Torus water makeup,

   THEN Perform the following:

   a. Close the Test Flow Return Valve V-20-27 (keylock RB 51 NW). _____

   b. Secure the Core Spray System 1 Main Pumps started in Step 3.1.4.3. _____

2. IF fire water was the source of Torus water makeup,

   THEN perform the following:

   a. Close the Test Flow Return Valve V-20-27 (keylock RB 51 NW) _____

   b. Close Fire Protection Supply Valve V-20-83 (North Side RB). _____

   c. Secure the Diesel Fire Pumps by taking their control switches in AUTO position (Panel 13R). _____

   d. Open Tell-Tale Drain Valve V-20-91 (North Side RB). _____

3.1.9 When filling is no longer required:

1. IF the CST was the source of Torus water makeup,

   THEN close and lock the following valves:

   - V-20-1 (NW Corner Room) _____
   - V-20-5 (NW Corner Room) _____
   - V-20-34 (NW Corner Room) _____

2. Confirm closed Torus Test Flow Return Valve V-20-27 (Panel 1F/2F) _____

3. Place and lock the breaker for V-20-27 in the OFF position (MCC 1A21B/RB 23 E) _____

4. Confirm the breakers for Core Spray Pump Suction Valves V-20-3 and V-20-32 in the ON position.
   - V-20-3 Bkr (MCC 1A21A/RB 23 SW) _____
   - V-20-32 Bkr (MCC 1B21A/RB 23 NE) _____
5. Open Core Spray Pump Suction Valves V-20-3 and V-20-32 (Panel 1F/2F). _____
6. IF Fire water was the source of torus water makeup,
   THEN return Core Spray System 1 Main Pump control switches to the normal mid position (Panel 1F/2F). _____
7. Verify Core Spray KEEP FILL TROUBLE (B-3-d) alarm is not illuminated. _____

3.2

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 2 has been designated to be used,
THEN perform the following:

3.2.1 Confirm stopped the Core Spray Main and Booster Pumps in Core Spray System 2 (Panel 1F/2F). _____

3.2.2 Close Core Spray System 2 Suction valves V-20-4 and V-20-33 (Panel 1F/2F). _____

3.2.3 Confirm closed Parallel Isolation valves V-20-21 and V-20-41 (Panel 1F/2F). _____

3.2.4 IF the NW and SW Corner Rooms are accessible
AND
the CST is the source of Torus water makeup,
THEN perform the following:

1. Place the breakers for Core Spray Pump Suction Valves V-20-4 and V-20-33 in the OFF position.
   - V-20-4 Bkr (MCC 1B21A/RB 23 NE) _____
   - V-20-33 Bkr (MCC 1A21A/RB 23 SW) _____

2. Unlock and open the following CST supply valves:
   - V-20-1 (NW Corner Room) _____
   - V-20-2 (SW Corner Room) _____
   - V-20-35 (SW Corner Room) _____
3. Start Core Spray System 2 Main Pump NZ01B or NZ01D. _____

3.2.5 IF the NW or SW Corner Room is NOT accessible
THEN perform the following to use firewater as the source of Torus water makeup:
1. Close Tell-Tale Drain Valve V-20-90 (South Side RB). _____
2. Start the Diesel Fire Pumps by placing their switches in MAN position (Panel 13R) _____
3. Open Fire Protection Supply Valve V-20-82 (South Side RB). _____
4. Place Core Spray System 2 Main Pump control switches in the PULL-TO-LOCK position (Panel 1F/2F). _____

3.2.6 Unlock and place the breaker for Torus Test Flow Return Valve V-20-26 in the ON position (MCC 1B21A/RB 23 NE). _____

3.2.7 Open Test Flow Return valve V-20-26 (Keylock RB 75 SW). _____

3.2.8 WHEN Torus level is greater than 143 in. but less than 154 in.,
THEN perform the following:
1. IF the CST was the source of Torus water makeup,
   THEN perform the following:
   a. Close the Test Flow Return Valve V-20-26 (keylock RB 75 SW) _____
   b. Secure the Core Spray System 2 Main Pumps started in Step 3.2.4.3 _____
2. IF fire water was the source of Torus water makeup,
   THEN perform the following:
   a. Close the Test Flow Return Valve V-20-26 (keylock RB 75 SW)

b. Close Fire Protection Supply Valve V-20-82 (South Side RB). _____

c. Secure the Diesel Fire Pumps by taking their control switches in AUTO position (Panel 13R). _____

d. Open Tell-Tale Drain Valve V-20-90 (South Side RB). _____

3.2.9 When filling is no longer required:

1. IF the CST was the source of Torus water makeup, THEN close and lock the following valves:
   - V-20-1 (NW Corner Room) _____
   - V-20-2 (SW Corner Room) _____
   - V-20-35 (SW Corner Room) _____
2. Confirm closed Torus Test Flow Return Valve V-20-26 (Panel 1F/2F). _____
3. Place and lock the breaker for V-20-26 in the OFF position (MCC 1B21A/RB 23 NE). _____
4. Confirm the breakers for Core Spray Pump Suction Valves V-20-4 and V-20-33 in the ON position.
   - V-20-4 Bkr (MCC 1B21A/RB 23 NE) _____
   - V-20-33 Bkr (MCC 1A21A/RB 23 SW) _____
5. Open Core Spray Pump Suction Valves V-20-4 and V-20-33 (Panel 1F/2F). _____
6. IF Fire water was the source of torus water makeup, THEN return Core Spray System 2 Main Pump control switches to the normal mid position (Panel 1F/2F). _____
7. Verify Core Spray KEEP FILL TROUBLE (B-3-d) alarm is not illuminated. _____

# SUPPORT PROCEDURE 38

DETERMINING PRIMARY CONTAINMENT WATER LEVEL

1.0 PREREQUISITES

1.1 Determination of Primary Containment Water Level has been directed by the Emergency Operating Procedures.

1.2 Primary Containment Water Level is greater than the range of the wide range Torus level recorder (0-360 inches) on Panel 16R.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Calculate Primary Containment Water Level by completing the following:

3.1.1 Record Torus pressure from one of the following:

1. Digital indicator on Panel 4F
2. Computer Point ID PTIP12
3. PT-IP12 on Panel 1F/2F P(Torus) = _____ psig

3.1.2 Record Drywell pressure from PI-IP08 on Panel 1F/2F P(DW) = _____ psig

3.1.3 Calculate ΔP

ΔP = P(Torus) - P(DW) = _____ psid

3.1.4 IF ΔP is greater than 16 psid

THEN continue at Step 3.2 of this procedure

3.1.5 Determine Primary Containment Water Level using Figure 38-1.

3.2 IF Torus - DW ΔP is greater than 16 psid

THEN calculate Primary Containment Water Level by completing the following:

3.2.1 Record Torus pressure from one of the following:

1. Digital indicator on Panel 4F
2. Computer Point ID PTIP12
3. PT-IP12 on Panel 1F/2F P(Torus) = _____ psig.

3.2.2 Record Drywell pressure from Pen 3 of

Recorder 12XR-6 (Panel 12XR) P(DW)_____ psig

3.2.3 Calculate $\Delta P$

$\Delta P$ = P(Torus) - P(DW)= _____ psid

3.2.4 Determine Primary Containment Water Level using Figure 38-2.

Figure 38-1
Containment Water Level Determination Using DW
Pressure Indication From Panel 1F/2F

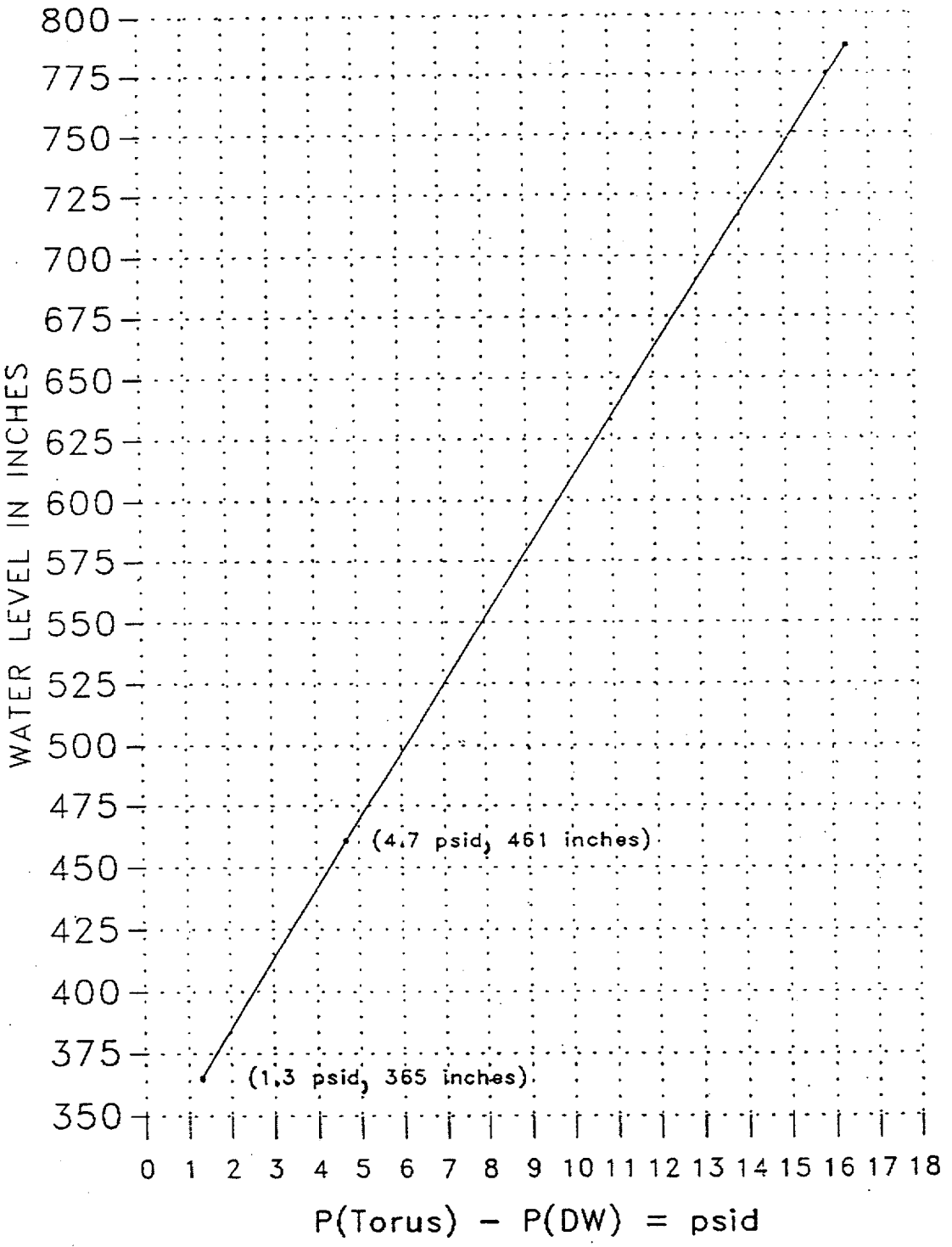
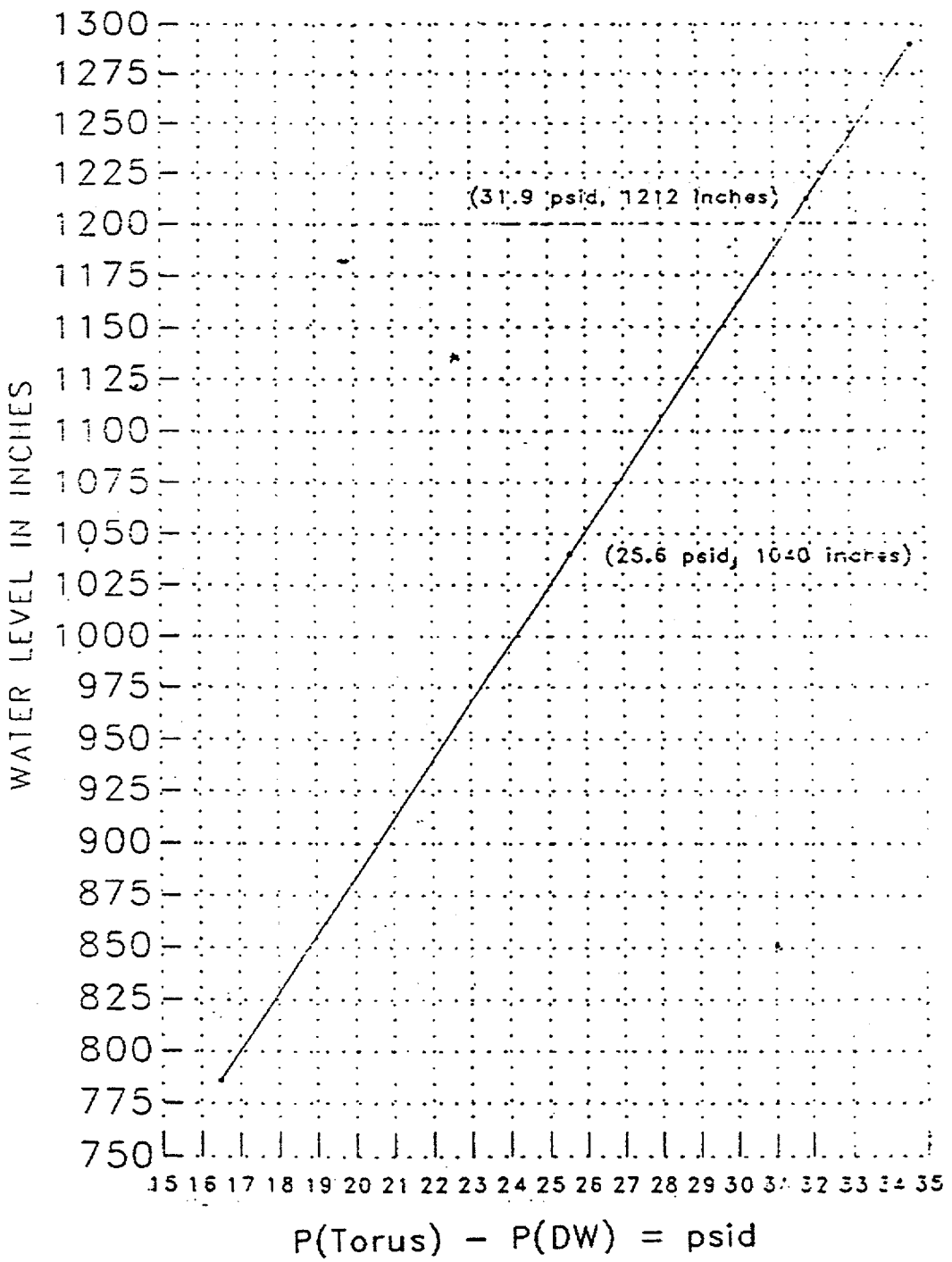


Figure 38-2
Containment Water Level Determination Using DW
Pressure Indication From Pen 3 of Recorder 12XR-6 (Panel 12XR)



# SUPPORT PROCEDURE 39

PLACING THE H2/O2 MONITORING SYSTEM IN SERVICE

1.0 PREREQUISITES

Placing the H2/O2 Monitoring System in service has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Placing Channel A in service (Panel 16R):

3.1.1 Place switch for V-38-37 to OPEN _____

3.1.2 Place switch for V-38-38 to OPEN _____

3.1.3 Place switch for V-38-39 to OPEN _____

3.1.4 Place switch for V-38-40 to OPEN _____

> NOTE
>
> When switching to the ANALYZE mode, a system trouble alarm may occur due to analyzer cell low flow.

3.1.5 Place mode switch in ANALYZE. _____

3.1.6 IF DW H2/02 SYS A TROUBLE alarm (C-8-f) annunciates,
THEN acknowledge the alarm and reset by depressing the ALARM RESET pushbutton (Panel 16R).

3.2 Placing Channel B in service (Panel 16R):

3.2.1 Place switch for V-38-41 to OPEN. _____

3.2.2 Place switch for V-38-43 to OPEN. _____

3.2.3 Place switch for V-38-44 to OPEN. _____

3.2.4 Place switch for V-38-46 to OPEN. _____

> NOTE
>
> When switching to the ANALYZE mode, a system trouble alarm may occur due to analyzer cell low flow.

3.2.5 Place mode switch in ANALYZE. _____

3.2.6 IF DW H2/02 SYS B TROUBLE alarm (C-8-g) annunciates,

THEN acknowledge the alarm and reset by depressing the ALARM RESET pushbutton (Panel 16R).

3.3 Record time. _____
Time

3.4

> NOTE
>
> A five (5) minute stabilization period is required after switching an analyzer from STANDBY to ANALYZE.

After a minimum 5 minute wait time, observe $H_2$ and $O_2$ concentrations.

# SUPPORT PROCEDURE 40

ISOLATION OF THE PRIMARY CONTAINMENT VENT AND PURGE VALVES

1.0 PREREQUISITES

Isolation of the Primary Containment Vent and Purge Valves has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

NONE

3.0 PROCEDURE

Confirm closed the vent and purge valves that are NOT being used for Primary Containment Pressure Control.

| System | Valve No. | Panel | |
|---|---|---|---|
| DW Vent/Purge | V-27-1 | 11F | _____ |
| | V-27-2 | 11F | _____ |
| | V-27-3 | 11F | _____ |
| | V-27-4 | 11F | _____ |
| Torus Vent | V-28-17 | 11F | _____ |
| | V-28-18 | 11F | _____ |
| Torus 2" Vent Bypass | V-28-47 | 11F | _____ |
| DW 2" Vent Bypass | V-23-21 | 12XR | _____ |
| | V-23-22 | 12XR | _____ |
| $N_2$Purge | V-23-13 | 12XR | _____ |
| | V-23-14 | 12XR | _____ |
| | V-23-15 | 12XR | _____ |
| | V-23-16 | 12XR | _____ |
| $N_2$Makeup | V-23-17 | 12XR | _____ |
| | V-23-18 | 12XR | _____ |
| | V-23-19 | 12XR | _____ |
| | V-23-20 | 12XR | _____ |

# SUPPORT PROCEDURE 41

VENTING THE TORUS FOR HYDROGEN CONTROL

1.0 PREREQUISITES

Torus venting has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for venting the Torus via the Reactor Building Ventilation System.

2.1 Verify Torus water level is below 348 in. _____

2.2 Evacuate personnel from the Reactor Building.

2.2.1 Sound the Reactor Building Evacuation Alarm. _____ Time

2.2.2 Make the announcement, "Primary Containment Venting will commence in approximately 5 minutes. All personnel evacuate the Reactor Building immediately. Stand clear of the Stack and the Rx. Bldg. Fan Pad." _____

2.3 Select a SGTS Train for operation and place its fan control switch in HAND (Panel 11R). _____

2.4 Place control switch for V-28-48, SGTS CROSSTIE, in CLOSED (Panel 11R). _____

2.5 Confirm Reactor Building Supply Fans secured (Panel 11R). _____

2.6 Confirm Reactor Building Exhaust Fan secured (Panel 11R). _____

2.7 Confirm that the Reactor Mode Selector Switch is NOT in the RUN position (Panel 4F). _____

2.8 Obtain a bypass plug from the EOP Tool Box in the Control Room.

2.9

> CAUTION
>
> The containment isolation function of the following valves is bypassed when the High Drywell Pressure and Reactor Low-Low Water Level Isolation signals are defeated:
>
> - Drywell Nitrogen Makeup Valves (V-23-17 and V-23-18)
> - Torus Nitrogen Makeup Valves (V-23-19 and V-23-20)

Open the EOP BYPASS PLUGS panel inside Panel 10XF.

2.9.1 Insert a bypass plug in position BP5. _____

2.10 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.10.1 Remove the bypass plug from position BP4. _____

2.10.2 Insert a bypass plug into position BP1. _____

2.11 Place the TORUS/DRYWELL ISOLATION VALVE BYPASS PERMISSIVE keylock switch in TORUS position (Panel 11F). _____

2.12 Place the TORUS/DW VENT AND PURGE ISOL VLVS HI RAD BYP keylock switches for both Channels 1 and 2 in the BYPASS position (Panel 11F). _____

2.13 Inform the GSS/GOS that the Torus is ready to be vented via the Torus Vent valves.

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

3.1 Reset the Reactor Building Ventilation System by momentarily depressing the system RESET pushbutton (Panel 11R). _____

3.2 Confirm open Reactor Building Main Exhaust Isolation valves V-28-21 and V-28-22 (Panel 11R). _____

3.3 WHEN at least five minutes have passed since sounding the Reactor Building Evacuation Alarm,

THEN inform the GSS/GOS,

AND

start Reactor Building Exhaust Fan 1-5 (Panel 11R). _____

3.4 Open Torus Vent valves V-28-18 and V-28-47 (Panel 11F). _____

3.5 Inform the GSS/GOS that Torus venting via V-28-18 and V-28-47 has commenced. _____

3.6 WHEN Torus pressure is below 2 psig,

THEN inform the GSS/GOS and open Torus Vent valve V-28-17 _____

# SUPPORT PROCEDURE 42

PURGING THE DRYWELL FOR HYDROGEN CONTROL

1.0 PREREQUISITES

Purging the Drywell has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for purging the Drywell.

2.1 Station an Equipment Operator and establish communications between the Nitrogen Supply Station and the Control Room. _____

2.2

> CAUTION
>
> The containment isolation function of the following valves is bypassed when the CNTMT VENT AND PURGE ISOLATION BYPASS Keylock is in the BYPASS position:
>
> - Drywell Ventilation Isolation Valves (V-27-1, 2, 3 and 4)
> - Drywell Nitrogen Purge Inlet Valves (V-23-13 and V-23-14)
> - Torus Nitrogen Purge Inlet Valves (V-23-15 and V-23-16)

Place the CNTMT VENT AND PURGE ISOLATION BYPASS keylock (Panel 12XR) in the BYPASS position. _____

2.3 Confirm that the ABSORP CHAM VAC REL (Torus to Reactor Building Vacuum Breakers, V-26-16 and V-26-18) control switch in the CLOSE position (Panel 11F). _____

2.4 Confirm open Purge Line Isolation Valve V-23-357 (NE corner RB, outside) _____

2.5 Confirm open Drywell Purge Isolation Valve V-23-195 (NE corner RB, outside) _____

2.6 Inform the GSS/GOS that nitrogen purging of the Drywell is ready to commence. _____

3.0 PROCEDURE

When directed by the GSS/GOS, perform the following:

> NOTE
>
> All valves and electrical components, unless noted otherwise, are located at the Nitrogen Pad.

3.1 Line up nitrogen supply to the Drywell by opening valves V-23-13 and V-23-14 (Panel 12XR). _____

3.2 Prepare the nitrogen vaporizer for purging by completing the following:

3.2.1 Confirm the following knife switches in the ON position:

- SW-854-167 _____
- SW-854-168 _____
- SW-854-165 _____

3.2.2 On the selected heater control cabinet (HTR-854-165 or 166), complete the following:

- Place the power switch in ON position (upper right hand side) _____
- Place the power control switch in ON position _____
- Verify that the POWER ON light is lit _____

3.2.3 Confirm that there is no debris below or in the area around the nitrogen vaporizer. _____

3.2.4 Place the knife switch for M-23-1 in ON position. _____

3.2.5

> CAUTION
>
> The following step will start the nitrogen vaporizer fan which blows down. Hearing and eye protection is required.

Place the control switch for M-23-1 in HAND position. _____

3.3 Crack open, then completely open the nitrogen supply tank outlet to vaporizer valve V-23-268. _____

3.4 Crack open, then completely open the inlet and outlet valves for the selected heater:

| | HTR-854-165 | HTR-854-166 | |
|---|---|---|---|
| Inlet Valve | V-23-363 | V-23-365 | _____ |
| Outlet Valve | V-23-364 | V-23-366 | _____ |

3.5 Place the thermostatic regulating valve in service by opening valves V-23-186 and V-23-187. _____

3.6 Select a Grove Reducer and open the appropriate inlet, outlet and supply valves:

| | | | |
|---|---|---|---|
| Grove Reducer | V-23-235 | V-23-234 | _____ |
| Inlet Valve | V-23-189 | V-23-190 | _____ |
| Outlet Valve | V-23-191 | V-23-192 | _____ |
| Supply Valve | V-23-193 | V-23-194 | _____ |

3.7 Establish nitrogen purge flow by completing the following:

3.7.1 Using a wrench, turn the control valve on top of the selected Grove Reducer in the clockwise direction until pressure as indicated on PI-854-1732 is 55 psig. _____

3.7.2 Verify purge flow on the NITROGEN PURGE & MAKEUP FLOW Recorder (Panel 12XR). _____

3.7.3

NOTE

Initial temperature could be 20 to 30°F above nominal setpoints of 80°F. After 5 to 10 minutes, dependent on ambient temperature, temperature will stabilize.

CAUTION

The temperature range of 65°-95°F as read in the Control Room is important to prevent brittle fracture and cracking of piping within the containment.

Confirm $N_2$ temperature 65-95°F as indicated on the PURGE $N_2$ TEMP gauge (Panel 12XR). _____

3.7.4 IF ambient temperature is greater than 80°F,

AND

$N_2$ temperature is above 95°F as indicated on the PURGE $N_2$ TEMP gauge (Panel 12XR)

THEN secure the nitrogen vaporizer fan by placing the control switch for M-23-001 in OFF position. _____

3.8 Inform the GOS/GSS that Drywell purging has commenced. _____

3.9 WHEN directed to secure the nitrogen purge,

THEN close Drywell Nitrogen purge valves V-23-13 and V-23-14 (Panel 12XR). _____

# SUPPORT PROCEDURE 43

VENTING THE DRYWELL FOR HYDROGEN CONTROL (LEVEL BELOW 461 IN)

1.0 PREREQUISITES

Drywell venting has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for venting the Drywell via the Reactor Building Ventilation System.

2.1 Verify Primary Containment water level is below 461 in. _____

2.2 Evacuate personnel from the Reactor Building.

2.2.1 Sound the Reactor Building Evacuation Alarm. _____ Time

2.2.2 Make the announcement, "Primary Containment Venting will commence in approximately five minutes. All personnel evacuate the Reactor Building immediately. Stand clear of the Stack and the Rx. Bldg. Fan Pad". _____

2.3 Select a SGTS Train for operation and place its fan control switch in HAND (Panel 11R). _____

2.4 Place control switch for V-28-48, SGTS CROSSTIE, in CLOSED (Panel 11R). _____

2.5 Confirm Reactor Building Supply Fans secured (Panel 11R). _____

2.6 Confirm Reactor Building Exhaust Fan secured (Panel 11R). _____

2.7 Confirm that the Reactor Mode Selector switch is NOT in RUN (Panel 4F). _____

2.8 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.8.1 Remove the bypass plug from position BP4. _____

2.8.2 Insert the bypass plug into position BP1. _____

2.9 Place the TORUS/DRYWELL ISOLATION VALVE BYPASS PERMISSIVE keylock switch in the DRYWELL position (Panel 11F). _____

2.10 Place the TORUS/DW VENT AND PURGE ISOL VLVS HI RAD BYPASS keylock switches for both Channels 1 and 2 in the BYPASS position (Panel 11F). _____

2.11

> CAUTION
>
> The containment isolation function of the following valves is bypassed when the CNTMT VENT AND PURGE ISOLATION BYPASS is in the BYPASS position:
>
> - Drywell Ventilation Isolation Valves (V-27-1,2,3 & 4)
> - Drywell Nitrogen Purge Inlet Valves (V-23-13 & V-23-14)
> - Torus Nitrogen Purge Inlet Valves (V-23-15 & V-23-16)

Place the CNTMT VENT AND PURGE ISOLATION BYPASS Keylock in BYPASS position (Panel 12XR). _____

2.12 Inform the GSS/GOS that the Drywell is ready to be vented via the Drywell Vent valves. _____

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

3.1 Reset the Reactor Building Ventilation System by momentarily depressing the system RESET pushbutton (Panel 11R). _____

3.2 Confirm open Reactor Building Main Exhaust Isolation valves, V-28-21 and V-28-22 (Panel 11R). _____

3.3 WHEN at least five minutes have passed since sounding the Reactor Building Evacuation Alarm,

THEN inform the GSS/GOS,

AND

start Reactor Building Exhaust Fan 1-5 (Panel 11R). _____

3.4 Open Drywell Vent valves V-23-21 and V-23-22 (Panel 12XR). _____

3.5 Inform the GSS/GOS that Drywell venting via V-23-21 and V-23-22 has commenced. _____

3.6 WHEN Drywell Pressure is below 2 psig,

THEN inform the GSS/GOS,

AND

open Drywell Vent valves V-27-1 and V-27-2.

# SUPPORT PROCEDURE 44

VENTING THE DRYWELL THROUGH THE Rx BUILDING SUPPLY FANS

FOR HYDROGEN CONTROL (LEVEL ABOVE 461 IN)

1.0 PREREQUISITES

Drywell venting has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for venting the Drywell via the Rx Building Supply Fans.

2.1 Select a SGTS Train for operation and place its fan control switch in HAND (Panel 11R). _____

2.2 Place control switch for V-28-48, SGTS CROSSTIE, in CLOSE (Panel 11R). _____

2.3 Confirm Reactor Building Supply Fans secured (Panel 11R). _____

2.4 Confirm Reactor Building Exhaust Fan secured (Panel 11R). _____

2.5 Confirm closed Reactor Building Ventilation Isolation dampers V-28-1 through V-28-16 and V-28-36 through V-28-39 (Panel 11R). _____

2.6 Place TORUS/DW VENT AND PURGE ISOL VLVS HI RAD BYPASS keylock switches for both Channels 1 and 2 in BYPASS (Panel 11F). _____

2.7 Confirm Reactor Building to Torus Vacuum Breakers V-26-16 and V-26-18 control switch in CLOSE position (Panel 11F). _____

2.8

CAUTION

The containment isolation function of the following valves is bypassed when the CNTMT VENT AND PURGE ISOLATION BYPASS keylock is in the BYPASS position:

- Drywell Ventilation Isolation Valves (V-27-1,2,3 & 4)
- Drywell Nitrogen Purge Inlet Valves (V-23-13 & V-23-14)
- Torus Nitrogen Purge Inlet Valves (V-23-15 & V-23-16)

Place the CNTMT VENT AND PURGE ISOLATION BYPASS keylock in the BYPASS position (Panel 12XR). _____

2.9 Obtain two bypass plugs from the EOP Tool Box in the Control Room.

2.10 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.10.1 Insert a bypass plug into position BP2. _____

2.10.2 Insert a bypass plug into position BP3. _____

2.11

NOTE

The tools that are required to complete this step are stored in the EOP Tool Box in the Control Room.

On the Office Building Roof, perform the following to establish a back flow path through one of the Reactor Building Supply Fans:

2.11.1 Disconnect the air operator linkages on the automatic damper of one Reactor Building Supply Fan:

| Supply Fan | Automatic Damper | |
|---|---|---|
| SF-1-12 | DM-28-42 | _____ |
| SF-1-13 | DM-28-43 | _____ |
| SF-1-14 | DM-28-41 | _____ |

2.11.2 Manually open the automatic damper for the supply fan selected. _____

2.11.3 Secure the automatic damper in the open position by tightening the wing nuts on the damper positioning device. _____

2.11.4 Confirm open the manual damper downstream of the supply fan chosen.

| Supply Fan | Manual Damper | |
|---|---|---|
| SF-1-12 | DM-28-46 | _____ |
| SF-1-13 | DM-28-47 | _____ |
| SF-1-14 | DM-28-48 | _____ |

2.11.5 Secure the manual damper in the open position by tightening the wing nuts on the damper positioning device . _____

2.12 Evacuate personnel from the Reactor Building and Main Office Building

2.12.1 Sound the Reactor Building Evacuation Alarm. _____ Time

2.12.2 Make the announcement, "Primary Containment Venting will commence in approximately five minutes. All personnel evacuate the Reactor Building and Main Office Building immediately". _____

2.13

**CAUTION**

Contamination of the Control Room HVAC System may result when venting through V-27-3 and V-27-4.

Place the Control Room Ventilation in Full Recirculation Mode as follows:

2.13.1 Place the Control Room HVAC Damper Control switch in FULL RECIRC position (SYS A Panel 11R/SYS B Panel 9XR). _____

2.13.2 Confirm exhaust fan EF-1-24 control switch is OFF (Control Room behind Panel 11F) and its damper is closed (CR Bathroom) _____

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

> CAUTION
>
> An unmonitored, ground level release of radioactive gases will result from venting the primary containment via the Reactor Building Supply Fans.

3.1 Reset the Drywell Isolation Signal by momentarily depressing the DRYWELL ISOLATION reset pushbutton (Panel 4F). _____

3.2

> CAUTION
>
> Contamination of the Main Office Building may result from venting the primary containment through purge valves V-27-3, V-27-4, and the Reactor Building Supply Fans.

WHEN at least five minutes has passed since sounding the Reactor Building evacuation alarm

THEN inform the GSS/GOS and perform the following:

3.2.1 Open drywell air supply valves V-28-42 and V-28-43 (Panel 11R). _____

3.2.2 Open drywell purge valves V-27-3 and V-27-4 (Panel 11F). _____

3.3 Inform the GSS/GOS that Drywell Venting has commenced.

# SUPPORT PROCEDURE 45

PURGING THE TORUS FOR HYDROGEN CONTROL

1.0 PREREQUISITES

Purging the Torus has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for purging the Torus.

2.1 Station an Equipment Operator and establish communications between the Nitrogen Supply Station and the Control Room. _____

2.2

> CAUTION
>
> The containment isolation function of the following valves is bypassed when the CNTMT VENT AND PURGE ISOLATION BYPASS keylock is in the BYPASS position:
>
> - Drywell Ventilation Isolation Valves (V-27-1, 2, 3, and 4)
> - Drywell Nitrogen Purge Inlet Valves (V-23-13 and V-23-14)
> - Torus Nitrogen Purge Inlet Valves (V-23-15 and V-23-16)

Place the CNTMT VENT AND PURGE ISOLATION BYPASS keylock (Panel 12XR) in the BYPASS position. _____

2.3 Confirm that the ABSORP CHAM VAC REL (Torus to Reactor Building Vacuum Breakers, V-26-16 and V-26-18) control switch in the CLOSE position (Panel 11F). _____

2.4 Confirm open Purge Line Isolation Valve V-23-357 (NE corner RB, outside). _____

2.5 Confirm open Drywell Purge Isolation Valve V-23-195 (NE corner RB, outside). _____

2.6 Inform the GSS/GOS that nitrogen purging of the Torus is ready to commence

3.0 PROCEDURE

When directed by the GSS/GOS, perform the following:

> NOTE
>
> All valves and electrical components, unless noted otherwise, are located at the Nitrogen Pad.

3.1 Line up nitrogen supply to the Torus by opening valves V-23-15 and V-23-16 (Panel 12XR). _____

3.2 Prepare the nitrogen vaporizer for purging by completing the following:

3.2.1 Confirm the following knife switches in the ON position:

- SW-854-167 _____
- SW-854-168 _____
- SW-854-165 _____

3.2.2 On the selected heater control cabinet (HTR-854-165 or 166), complete the following:

- Place the power switch in ON position (upper right hand side) _____
- Place the power control switch in ON position. _____
- Verify that the POWER ON light is lit. _____

3.2.3 Confirm that there is no debris below or in the area around the nitrogen vaporizer. _____

3.2.4 Place the knife switch for M-23-1 in ON position. _____

3.2.5

> CAUTION
>
> The following step will start the nitrogen vaporizer fan which blows down. Hearing and eye protection is required.

Place the control switch for M-23-1 in HAND position. _____

3.3 Crack open, then completely open the nitrogen supply tank outlet to vaporizer valve V-23-268. _____

3.4 Crack open, then completely open the inlet and outlet valves for the selected heater:

| | HTR-854-165 | HTR-854-166 | |
|---|---|---|---|
| Inlet Valve | V-23-363 | V-23-365 | _____ |
| Outlet Valve | V-23-364 | V-23-366 | _____ |

3.5 Place the thermostatic regulating valive in service by opening valves V-23-186 and V-23-187. _____

3.6 Select a Grove Reducer and open the appropriate inlet, outlet and supply valves:

| | | | |
|---|---|---|---|
| Grove Reducer | V-23-235 | V-23-234 | _____ |
| Inlet Valve | V-23-189 | V-23-190 | _____ |
| Outlet Valve | V-23-191 | V-23-192 | _____ |
| Supply Valve | V-23-193 | V-23-194 | _____ |

3.7 Establish Nitrogen purge flow by completing the following:

3.7.1 Using a wrench, turn the control valve on top of the selected Grove Reducer in the clockwise direction until pressure as indicated on PI-854-1732 is 55 psig. _____

3.7.2 Verify purge flow on the NITROGEN PURGE & MAKEUP FLOW Recorder (Panel 12XR). _____

3.7.3

NOTE

Initial temperature could be 20 to 30°F above nominal setpoint of 80°F. After 5 to 10 minutes, dependent on ambient temperature, temperature will stabilize.

CAUTION

The temperature range of 65°-95°F as read in the Control Room is important to prevent brittle fracture and cracking of piping within the containment.

Confirm $N_2$ temperature 65-95°F as indicated on the PURGE $N_2$ TEMP gauge (Panel 12XR). _____

3.7.4 IF ambient temperature is greater than 80°F

AND

$N_2$ temperature is above 95°F as indicated on the PURGE $N_2$ TEMP gauge (Panel 12XR),

THEN secure the nitrogen vaporizer fan by placing the control switch for M-23-001 in OFF position. _____

3.8 Inform the GOS/GSS that Torus purging has commenced. _____

3.9 WHEN directed to secure the nitrogen purge,

THEN Close Torus purge valves V-23-15 and V-23-16 (Panel 12XR). _____

# SUPPORT PROCEDURE 46

VENTING THE TORUS FOR HYDROGEN CONTROL

1.0 PREREQUISITES

Torus venting has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for venting the Torus via the Reactor Building Ventilation System.

2.1 Confirm Torus water level is below 348 in. _____

2.2 Evacuate personnel from the Reactor Building.

2.2.1 Sound the Reactor Building Evacuation Alarm. _____ Time

2.2.2 Make the announcement, "Primary Containment Venting will commence in approximately 5 minutes. All personnel evacuate the Reactor Building immediately. Stand clear of the Stack and the Rx. Bldg. Fan Pad." _____

2.3 Select a SGTS Train for operation and place its fan control switch in HAND (Panel 11R). _____

2.4 Place control switch for V-28-48, SGTS CROSSTIE, in CLOSED (Panel 11R). _____

2.5 Confirm Reactor Building Supply Fans secured (Panel 11R). _____

2.6 Confirm Reactor Building Exhaust Fan secured (Panel 11R). _____

2.7 Confirm that the Reactor Mode Selector switch is NOT in the RUN position (Panel 4F. _____

2.8 Obtain a bypass plug from the EOP Tool Box in the Control Room.

2.9

> CAUTION
>
> The containment isolation function of the following valves is bypassed when the High Drywell Pressure and Reactor Low-Low Water Level isolation signals are defeated:
>
> - Drywell Nitrogen Makeup Valves (V-23-17 and V-23-18)
> - Torus Nitrogen Makeup Valves (V-23-19 and V-23-20)

Open the EOP BYPASS PLUGS panel inside Panel 10XF.

2.9.1 Insert a bypass plug into position BP5. _____

2.10 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.10.1 Remove the bypass plug from position BP4. _____

2.10.2 Insert the bypass plug into position BP1. _____

2.11 Place the TORUS/DRYWELL ISOLATION VALVE BYPASS PERMISSIVE keylock switch in TORUS position (Panel 11F). _____

2.12 Place the TORUS/DW VENT AND PURGE ISOL VLVS HI RAD BYPASS keylock switches for both Channels 1 and 2 in the BYPASS position (Panel 11F). _____

2.13 Inform the GSS/GOS that the Torus is ready to be vented via the Torus Vent valves. _____

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

3.1 Reset the Reactor Building Ventilation System by momentarily depressing the system RESET pushbutton (Panel 11R). _____

3.2 Confirm open Reactor Building Main Exhaust Isolation valves V-28-21 and V-28-22 (Panel 11R). _____

3.3 WHEN at least five minutes have passed since sounding the Reactor Building Evacuation Alarm,

THEN inform the GSS/GOS

AND

start Reactor Building Exhaust Fan 1-5 (Panel 11R). _____

3.4 Open Torus Vent valves V-28-18 and V-28-47 (Panel 11F). _____

3.5

> CAUTION
>
> Ventilation Ductwork Failure can occur when venting through V-28-17 with Torus pressure greater than 2 psig.

Open Torus Vent valve V-28-17 (Panel 11F). _____

3.6 Inform the GSS/GOS that Torus venting via V-28-17, V-28-18 and V-28-47 has commenced. _____

3.7 IF Containment pressure drops below 0.6 psig

THEN 1. Stop Exhaust Fan 1-5 (Panel 11R). _____

2. Close Reactor Building Main Exhaust Isolation Valves V-28-21 and V-28-22 (Panel 11R). _____

# SUPPORT PROCEDURE 47

VENTING THE DRYWELL FOR HYDROGEN CONTROL (LEVEL BELOW 461 IN)

1.0 PREREQUISITES

Drywell venting has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for venting the Drywell via the Reactor Building Ventilation System.

2.1 Verify Primary Containment water level is below 461 in. _____

2.2 Evacuate personnel from the Reactor Building.

2.2.1 Sound the Reactor Building Evacuation Alarm. _____ Time

2.2.2 Make the announcement, "Primary Containment Venting will commence in approximately five minutes. All personnel evacuate the Reactor Building immediately. Stand clear of the Stack and the Rx. Bldg. Fan Pad". _____

2.3 Select a SGTS Train for operation and place its fan control switch in HAND (Panel 11R). _____

2.4 Place control switch for V-28-48, SGTS CROSSTIE, in CLOSED (Panel 11R). _____

2.5 Confirm Reactor Building Supply Fans secured (Panel 11R). _____

2.6 Confirm Reactor Building Exhaust Fan secured (Panel 11R). _____

2.7 Confirm that the Reactor Mode Selector switch is NOT in RUN (Panel 4F). _____

2.8 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.8.1 Remove the bypass plug from position BP4. _____

2.8.2 Insert the bypass plug into position BP1. _____

2.9 Place the TORUS/DRYWELL ISOLATION VALVE BYPASS PERMISSIVE Keylock switch in DRYWELL position (Panel 11F). _____

2.10 Place the TORUS/DW VENT AND PURGE ISOLATION VLVS HI RAD BYPASS CHAN keylock switches for both Channels 1 and 2 in the BYPASS position (Panel 11F). _____

2.11

CAUTION

The containment isolation function of the following valves is bypassed when the CNTMT VENT AND PURGE ISOLATION BYPASS Keylock is in the BYPASS position:

- Drywell Ventilation Isolation Valves (V-27-1, 2, 3 and 4)
- Torus Nitrogen Purge Inlet Valves (V-23-15 and (V-23-14)
- Torus Nitrogen Purge Inlet Valves (V-23-15 and (V-23-16)

Place the CNTMT VENT AND PURGE ISOLATION BYPASS Keylock in the BYPASS position (Panel 12XR). _____

2.12 Inform the GSS/GOS that the Drywell is ready to be vented via the Drywell Vent valves. _____

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

3.1 Reset the Reactor Building Ventilation System by momentarily depressing the system RESET pushbutton (Panel 11R). _____

3.2 Confirm open Reactor Building Main Exhaust Isolation valves, V-28-21 and V-28-22 (Panel 11R). _____

3.3 WHEN at least five minutes have passed since sounding the Reactor Building Evacuation Alarm,

THEN inform the GSS/GOS,

AND

start Reactor Building Exhaust Fan 1-5 (Panel 11R) _____

3.4 Open Drywell Vent valves V-23-21 and V-23-22 (Panel 12XR). _____

3.5

CAUTION

Ventilation ductwork failure can occur when venting through V-27-1 and V-27-2 with drywell pressure greater than 2 psig.

Confirm Drywell pressure is below 24 psig and open Drywell Vent valves V-27-1 and V-27-2 (Panel 11F). _____

3.6 Inform the GSS/GOS that Drywell venting via V-23-21, V-23-22, V-27-1 and V-27-2 has commenced. _____

3.7 IF Containment Pressure drops below 0.6 psig.

THEN 1. Stop Exhaust Fan 1-5 (Panel 11R). _____

2. Close Reactor Building Main Exhaust Isolation Valves V-28-21 and V-28-22 (Panel 11R). _____

# SUPPORT PROCEDURE 48

VENTING THE DRYWELL THROUGH THE PURGE SYSTEM FOR HYDROGEN CONTROL

1.0 PREREQUISITES

Drywell venting has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

Perform the following steps in preparation for venting the Drywell via the Drywell Purge System and Reactor Building Ventilation System.

2.1 Evacuate personnel from the Reactor Building.

2.1.1 Sound the Reactor Building Evacuation Alarm. _____ Time

2.1.2 Make the announcement, "Primary Containment Venting will commence in approximately five minutes. All personnel evacuate the Reactor Building immediately. Stand clear of the Stack and the Rx. Bldg. Fan Pad." _____

2.2 Select a SGTS Train for operation and place its fan control switch in HAND (Panel 11R). _____

2.3 Place control switch for V-28-48, SGTS CROSSTIE, in CLOSED (Panel 11R). _____

2.4 Confirm Reactor Building Supply Fans secured (Panel 11R). _____

2.5 Confirm Reactor Building Exhaust Fan secured (Panel 11R). _____

2.6 Confirm closed Reactor Building Ventilation Isolation dampers V-28-1 through V-28-16 and V-28-36 through V-28-39 (Panel 11R). _____

2.7 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.7.1 Remove the bypass plug from position BP4. _____

2.7.2 Insert the bypass plug from position BP1. _____

2.8

> CAUTION
>
> The containment isolation function of the following valves is bypassed when the CNTMT VENT AND PURGE ISOLATION BYPASS Keylock is in the BYPASS position:
> - Drywell Ventilation Isolation Valves (V-27-1,2,3, and 4)
> - Drywell Nitrogen Purge Inlet Valves (V-23-13 and (V-23-14)
> - Torus Nitrogen Purge Inlet Valves (V-23-15 and (V-23-16)

Place the CNTMT VENT AND PURGE ISOLATION BYPASS Keylock in the BYPASS (Panel 12XR). _____

2.9 Place TORUS/DW VENT AND PURGE ISOL VLVS HI RAD BYPASS keylock switches for both Channels 1 and 2 in BYPASS (Panel 11F). _____

2.10 Confirm Reactor Building to Torus Vacuum Breakers V-26-16 and V-26-18 control switch in CLOSE position (Panel 11F). _____

2.11 Inform the GSS/GOS that the Drywell is ready to be vented via the Drywell Purge Valves. _____

3.0 PROCEDURE

When directed by the GSS/GOS, complete the following:

3.1 Reset the Reactor Building Ventilation System by momentarily depressing the system RESET pushbutton (Panel 11R). _____

3.2 Confirm open Reactor Building Main Exhaust Isolation Valves V-28-21 and V-28-22 (Panel 11R). _____

3.3 WHEN at least five minutes has passed since sounding the Reactor Building evacuation alarm

THEN inform the GSS/GOS,

AND

start Reactor Building Exhaust Fan 1-5 (Panel 11R). _____

3.4 Confirm closed Drywell Air Supply Valves V-28-42 and V-28-43 (Panel 11R). _____

3.5

> CAUTION
>
> Ventilation ductwork failure will occur when venting through V-27-3 and V-27-4 with drywell pressure greater than 2 psig.

Open Drywell Purge Valves V-27-3 and V-27-4 (Panel 11F). _____

3.6 Inform the GSS/GOS that Drywell Venting has commenced. _____

3.7 IF Containment pressure drops below 0.6 psig,

THEN 1. Stop Exhaust Fan 1-5 (Panel 11R). _____

2. Close Reactor Building Main Exhaust Isolation Valves V-28-21 and V-28-22 (Panel 11R). _____

| GPU NUCLEAR | OYSTER CREEK NUCLEAR GENERATING STATION PROCEDURE | Number **EMG-3200.10** |
|---|---|---|
| Title **CONTAINMENT FLOODING** | | Revision No. **8** |
| Applicability/Scope **EMERGENCY OPERATING PROCEDURE FOR OYSTER CREEK** | | Responsible Office **System Engineering E150** |
| This document is within QA plan scope X Yes ___ No<br>Safety Reviews Required X Yes ___ No | | Effective Date (04/25/00) 05/05/00 |

Prior Revision 7 incorporated the following Temporary Changes:

N/A

This Revision 8 incorporates the following Temporary Changes:

N/A

List Of Pages (all pages rev'd to Rev. 8)

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E9-1 to E9-2

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| | | PLANT OPERATIONS DIRECTOR | 4-13-00 |
| Approved By | | DIRECTOR, OPERATIONS & MAINTENANCE | 4-24-00 |

1.0 PURPOSE

The purpose of the Containment Flooding Procedure is to:

- Maintain adequate core cooling

2.0 REFERENCES

2.1 Procedures

- 107.4, EOP Program Control

2.2 Drawings

- BR 2002, Main, Extraction & Aux Steam System
- BR 3029, DC Control Elem Diagram
- BR E1102, Emer Condenser Isol Outlet Valve V-14-35
- GE 112C2248, Sht 2, Connection Diagram 11F
- GE 148F262, P&ID - Emergency Condenser System
- GE 237E566, Sht 1a 1b, 2, 4 & 5, Rx Protection System Elem Diagram

2.3 2000-GLN-3200.01, OC Plant Specific Technical Guidelines

2.4 2000-STD-1218.04, EOP Writer's Guide

3.0 PRECAUTIONS AND LIMITATIONS

3.1 This procedure gives guidance to the operator for bypassing isolation signals and automatic scrams which is a departure from the Oyster Creek Technical Specifications. It is permissible to take actions which depart from the plant's Technical Specifications during emergency conditions as authorized by 10 CFR 50.54(x).

4.0 ATTACHMENTS

4.1 Attachment A - Containment Flooding EOP Flowchart
DWG: GU 3E-200-08-008 Sh 4

4.2 Attachment B - Support Procedure 53, Fire Water Makeup to the CST

4.3 Attachment C - Support Procedure 54, Demineralized Water Makeup to the CST

4.4 Attachment D - Support Procedure 55, Transfer of High Purity Waste Sample Tanks to the Hotwell

4.5 Attachment E - Support Procedure 5, Fire Water Injection Via a Core Spray System

4.6 Attachment F - Support Procedure 56, One Core Spray System Lined Up with Suction from CST

4.7 Attachment G - Support Procedure 38, Determining Primary Containment Water Level

4.8 Attachment H - Support Procedure 57, Opening the MSIVs to Vent the RPV

4.9 Attachment I - Support Procedure 52, Opening the IC Tube Side Vents to Vent the RPV

ATTACHMENT A

Attachment A to EMG-3200.10, Containment Flooding, is the Containment Flooding EOP Flowchart, DWG: GU 3E-200-08-008, Sht 4, Rev. 1.

# SUPPORT PROCEDURE 53

FIRE WATER MAKEUP TO THE CST

1.0 PREREQUISITES

Fire Water makeup to the Condensate Storage Tank has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Close the Telltale Drain Valve V-9-11 (Condensate Transfer Bldg). _____

3.2 Unlock and open the Fire Water Isolation Valve, V-9-9 (Condensate Transfer Bldg). _____

3.3 Open the Fire Protection to CST Isolation Valve V-11-247 (Condensate Transfer Bldg). _____

3.4 Confirm both Diesel Fire Pumps are running by placing their control switches in MAN position. (Panel 13R). _____

# SUPPORT PROCEDURE 54

## DEMINERALIZED WATER MAKEUP TO THE CST

1.0 PREREQUISITES

Demineralized water makeup to the Condensate Storage Tank has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Open Manual Isolation valves V-12-47 and V-12-49 (Condensate Transfer Bldg). _____

3.2 Open Flow Control valve V-12-48 (Condensate Transfer Bldg). _____

3.3 Start all available Demineralized Water Transfer pumps (Panel 13R). _____

3.4 Open Demineralized Trailer Outlet valve V-10-383. _____

3.5 Open the Supply Valve to the Carbon Filter V-10-382. _____

3.6 Place the No. 1 Filter Feed Pump control switch to the ON position (Turbine Building Basement). _____

3.6.1 Adjust Pump Discharge Valve, V-10-24, as required to maintain inlet pressure at 95 psig ± 5 psig. _____

3.7 IF the No. 1 Filter Feed Pump does not start,

THEN 1. Place the No. 2 Filter Feed Pump control switch to the ON position. _____

2. Adjust Pump Discharge valve, V-10-26, as required to maintain inlet pressure at 95 psig ± 5 psig. _____

3.8 Throttle the chain operated Makeup System Outlet valve, V-55-70, as necessary to obtain approximately 75 gpm as read on the Final Effluent Flow Recorder (Turbine Building Basement). _____

# SUPPORT PROCEDURE 55

TRANSFER OF HIGH PURITY WASTE SAMPLE TANKS TO THE HOTWELL

1.0 PREREQUISITES

Transfer of the High Purity Waste Sample Tanks has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Direct Radwaste to transfer both High Purity Waste Sample Tanks to the Hotwells in accordance with Procedure 351.2, High Purity Waste System. _____

3.2 Inform Radwaste that no chemistry samples are required for the transfer. _____

# SUPPORT PROCEDURE 5

FIRE WATER FOR RPV WATER LEVEL CONTROL

1.0 PREREQUISITES

RPV water level control using Fire Water via the Core Spray System has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

2.1 IF Core Spray actuating signals are present,

THEN override Core Spray initiation logic by depressing the OVERRIDE switches for all the sensors that are lit and depressing all ACTUATED switches, whether lit or unlit.

3.0 PROCEDURE

3.1

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 1 pumps are not available,

THEN inject fire water as follows:

3.1.1 Confirm stopped the Core Spray Main and Booster Pumps on Core Spray System 1 (Panel 1F/2F). _____

3.1.2 Place the Core Spray System 1 Main Pump control switches in the PULL-TO-LOCK position (Panel 1F/2F). _____

3.1.3 Close Tell-Tale Drain Valve, V-20-91 (RB 23 North or North Side RB outside). _____

3.1.4 Confirm running all Diesel Fire Pumps by placing their control switches in MAN position (Panel 13R). _____

3.1.5 Open Fire Water Supply Valve, V-20-83 (RB 23 North or North Side RB outside). _____

3.1.6 Confirm open Core Spray System 1 Discharge Valve, V-20-12 (Panel 1F/2F). _____

3.1.7 Confirm closed Core Spray System 1 Test Flow Return Valve, V-20-27 (Panel 1F/2F). _____

3.1.8 Confirm closed Core Spray System 1 Test Flow Return Valve, V-20-27 (Panel 1F/2F). _____

3.1.9 Close Core Spray System 1 Pump Suction Valves, V-20-32 and V-20-3 (Panel 1F/2F). _____

3.2

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 2 is to be used,

THEN inject Fire Water as follows:

3.2.1 Confirm stopped the Core Spray Main and Booster Pumps on Core Spray System 2. _____

3.2.2 Place the Core Spray System 2 Main Pump control switches in PULL-TO-LOCK position. _____

3.2.3 Close Tell-Tale Drain Valve V-20-90 (RB 23 South, or South Side RB outside). _____

3.2.4 Confirm running all Diesel Fire Pumps by placing their control switches in MAN position (Panel 13R). _____

3.2.5 Open Fire Water Supply Valve, V-20-82 (RB 23 South or South Side RB outside). _____

3.2.6 Confirm open Core Spray System 2 Discharge Valve, V-20-18 (Panel 1F/2F). _____

3.2.7 Confirm open either Core Spray System 2 Parallel Isolation Valve, V-20-21 or V-20-41 (Panel 1F/2F). _____

3.2.8 Confirm closed Core Spray System 2 Test Flow Return Valve, V-20-26 (Panel 1F/2F). _____

3.2.9 Close Core Spray System 2 Suction Valves, V-20-33 and V-20-4 (Panel 1F/2F). _____

# SUPPORT PROCEDURE 56

ONE CORE SPRAY SYSTEM LINED UP WITH SUCTION FROM CST

1.0 PREREQUISITES

1.1 Lining up one core spray system for CST Suction has been directed by the Emergency Operating Procedures.

1.2 The Reactor Building and NW Corner Room are accessible.

2.0 PREPARATION

2.1 IF Core Spray actuating signals are present,

THEN override Core Spray initiation logic by depressing the OVERRIDE switches for all the sensors that are lit and depressing all ACTUATED switches, whether lit or unlit.

2.2 This procedure requires the use of an MB-1 key and access to the Rx. Bldg.

3.0 PROCEDURE

3.1

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 1 is designated to be used,

THEN complete the following:

3.1.1 Confirm stopped the Core Spray Main and Booster Pumps in Core Spray System 1 (Panel 1F/2F). _____

3.1.2 Place Core Spray System 1 Main Pump control switches in PULL-TO-LOCK position (Panel 1F/2F). _____

3.1.3 Close Core Spray Pump Suction valves V-20-3 and V-20-32 (Panel 1F/2F). _____

3.1.4 Place the breakers for Core Spray Pump Suction Valves V-20-3 and V-20-32 in the OFF position.

- V-20-3 Bkr. (MCC 1A21A/RB 23 SW) _____
- V-20-32 Bkr. (MCC 1B21A/RB 23 NE) _____

3.1.5 Confirm closed the Test Flow Return Valve V-20-27 (Panel 1F/2F). _____

3.1.6 Unlock and open the following CST supply valves:

- V-20-1 (NW Corner Room) _____
- V-20-5 (NW Corner Room) _____
- V-20-34 (NW Corner Room) _____

3.1.7

> CAUTION
>
> Diesel Generator overload will result if a Core Spray Main and Booster Pump are started with a Diesel Generator load of greater than 2000 KW.

IF Bus 1C or 1D are being supplied by a Emergency Diesel Generator,

THEN verify that adequate load margin is available so as NOT to exceed EDG load limit when starting Core Spray Pumps. _____

3.1.8 Start Core Spray System 1 Main Pump NZ01A or NZ01C (Panel 1F/2F). _____

3.1.9 Confirm open Core Spray System 1 Discharge Valve V-20-12 (Panel 1F/2F). _____

3.1.10 Confirm open either Core Spray System 1 Parallel Isolation Valve V-20-15 or V-20-40 (Panel 1F/2F). _____

3.1.11 Start the Core Spray Booster Pump associated with the running main pump or the other main pump as directed by the GSS/GOS.

3.2

| NOTE |
| --- |
| Overriding Core Spray initiation logic may be required. |

IF Core Spray System 2 is designated to be used,

THEN complete the following:

3.2.1 Confirm stopped the Core Spray Main and Booster Pumps in Core Spray System 2 (Panel 1F/2F). _____

3.2.2 Place Core Spray System 2 Main Pump control switches in PULL-TO-LOCK position (Panel 1F/2F). _____

3.2.3 Close Core Spray Pump Suction valves V-20-4 and V-20-33 (Panel 1F/2F). _____

3.2.4 Place the breakers for Core Spray Pump Suction Valves V-20-4 and V-20-33 in the OFF position.

- V-20-4 Bkr (MCC 1B21A/RB 23 NE) _____
- V-20-33 Bkr (MCC 1A21A/RB 23 SW) _____

3.2.5 Confirm closed the Test Flow Return Valve V-20-26 (Panel 1F/2F). _____

3.2.6 Unlock and open the following CST supply valves:

- V-20-1 (NW Corner Room) _____
- V-20-2 (SW Corner Room) _____
- V-20-35 (SW Corner Room) _____

3.2.7

CAUTION

Diesel Generator overload will result if a Core Spray Main and Booster Pump are started with a Diesel Generator load of greater than 2000 KW.

IF Bus 1C or 1D are being supplied by a Emergency Diesel Generator,

THEN verify that adequate load margin is available so as NOT to exceed EDG load limit when starting Core Spray Pumps. _____

3.2.8 Start Core Spray System 1 Main Pump NZ01B or NZ01D (Panel 1F/2F). _____

3.2.9 Confirm open Core Spray System 2 Discharge Valve V-20-18 (Panel 1F/2F). _____

3.2.10 Confirm open either Core Spray System 2 Parallel Isolation Valve V-20-21 or V-20-41 (Panel 1F/2F). _____

3.2.11 Start the Core Spray Booster Pump associated with the running main pump or the other main pump as directed by the GSS/GOS. _____

# SUPPORT PROCEDURE 38

## DETERMINING PRIMARY CONTAINMENT WATER LEVEL

1.0 PREREQUISITES

1.1 Determination of Primary Containment Water Level has been directed by the Emergency Operating Procedures.

1.2 Primary Containment Water Level is greater than the range of the wide range Torus level recorder (0-360 inches) on Panel 16R.

2.0 PREPARATION

None

3.0 PROCEDURE

3.1 Calculate Primary Containment Water Level by completing the following:

3.1.1 Record Torus pressure from one of the following:

1. Digital indicator on Panel 4F
2. Computer Point ID PTIP12
3. PT-IP12 on Panel 1F/2F P(Torus) = _____psig

3.1.2 Record Drywell pressure from PI-IP08 on Panel 1F/2F P(DW) = _____psig

3.1.3 Calculate $\Delta P$

$\Delta P$ = P(Torus) - P(DW) = _____psid

3.1.4 IF $\Delta P$ is greater than 16 psid

THEN continue at Step 3.2 of this procedure.

3.1.5 Determine Primary Containment Water Level using Figure 38-1.

3.2 IF Torus - DW $\Delta P$ is greater than 16 psid,

THEN calculate Primary Containment Water Level by completing the following:

3.2.1 Record Torus pressure from one of the following:

1. Digital indicator on Panel 4F
2. Computer Point ID PTIP12
3. PT-IP12 on Panel 1F/2F

P(Torus) = _____psig

3.2.2 Record Drywell pressure from Sample Entry Pressure gauge on H2/02 Panel IT-1B or IT-1A (Reactor Bldg El. 75'). $P(H_2/O_2)$_____psig

3.2.3 Calculate $\Delta P$

$\Delta P = P(Torus) - P(H_2/O_2)$ = _____psid

3.2.4 Determine Primary Containment Water Level using Figure 38-2.

**FIGURE 38-1**
**CONTAINMENT WATER LEVEL DETERMINATION USING DW PRESSURE INDICATION FROM PANEL 1F/2F**

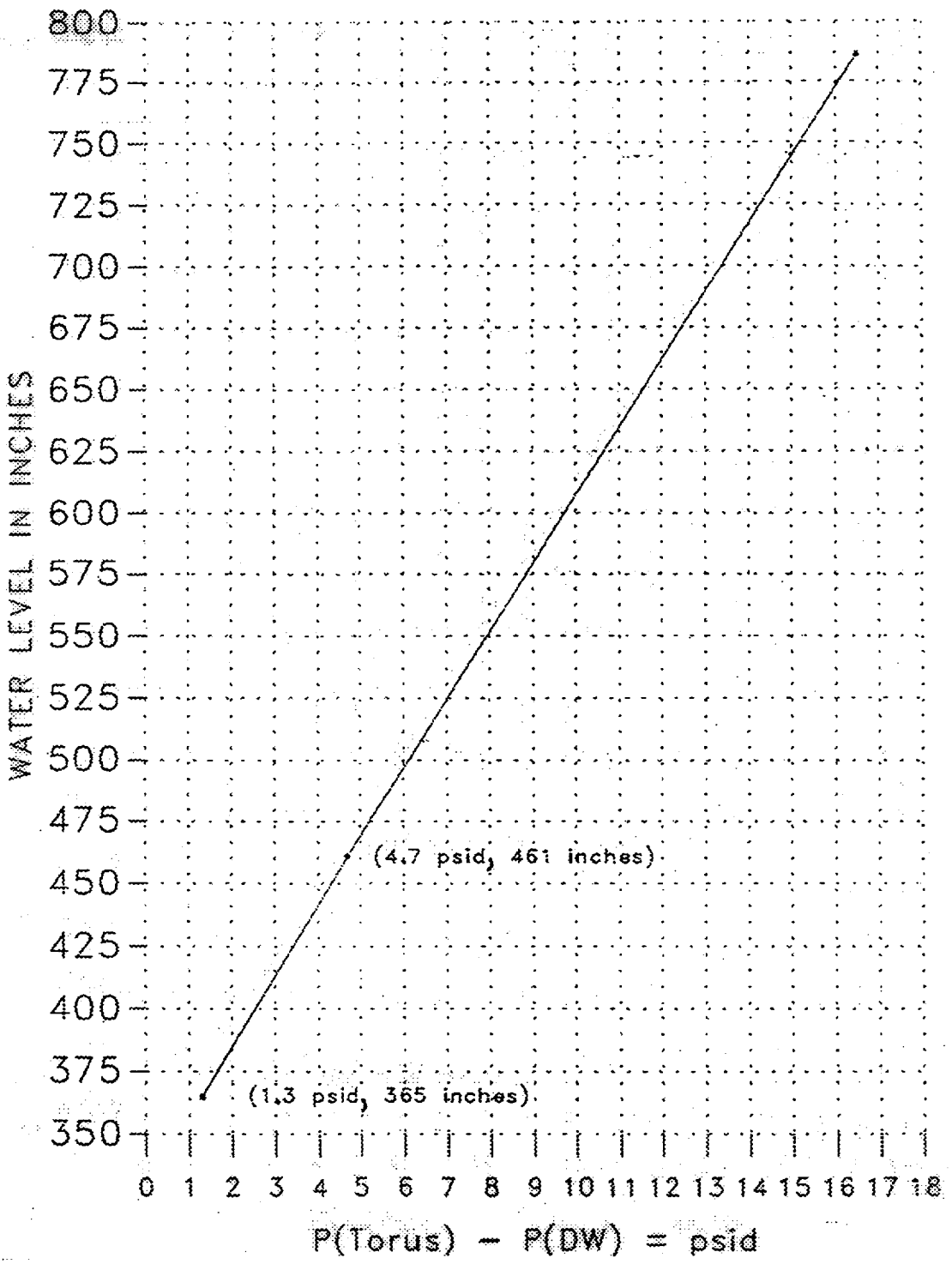
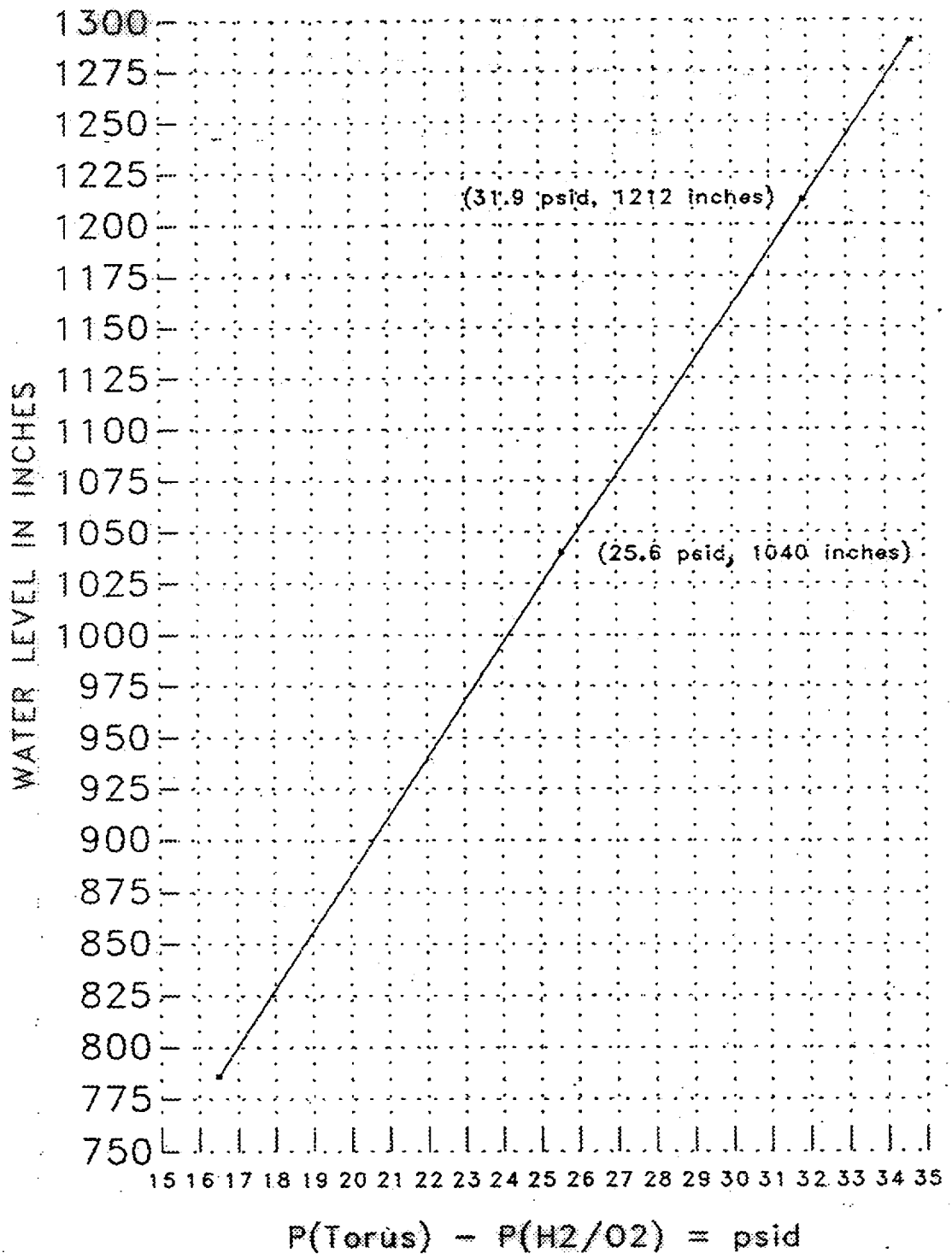


**FIGURE 38-2**
**CONTAINMENT WATER LEVEL DETERMINATION USING DW PRESSURE INDICATION FROM THE $H_2/O_2$ PANELS RB 75'**



# SUPPORT PROCEDURE 57

OPENING THE MSIVs TO VENT THE RPV

1.0 PREREQUISITES

Opening the MSIVs to vent the RPV has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

2.1 Obtain four (4) bypass plugs from the EOP Tool Box in the Control Room.

2.2 Open the EOP BYPASS PLUGS panel in the rear of Panel 6R.

2.2.1 Insert a bypass plug into position BP3. _____

2.2.2 Insert a bypass plug into position BP4. _____

2.3 Open the EOP BYPASS PLUGS panel in the rear of Panel 7R.

2.3.1 Insert a bypass plug into position BP3. _____

2.3.2 Insert a bypass plug into position BP4. _____

2.4 Reset the MSIV isolation signal by momentarily depressing the MAIN STEAM ISOLATION RESET pushbutton (Panel 4F). _____

2.5 Confirm the TEST SWITCH V-6-395 is in the NOR position (Panel 11F). _____

2.6 Open the INSTRUMENT AIR ISOLATION VALVE, V-6-395, by placing its control switch in the OPEN position (Panel 11F). _____

2.7 Inform GSS/GOS that MSIVs are ready to be opened. _____

3.0 PROCEDURE

When directed by the GSS/GOS, perform the following:

3.1

> CAUTION
>
> Damage to piping or components downstream of the MSIVs could result if MSIVs are opened with differential pressure greater than 360 psid.

Regardless of the differential pressure open the Main Steam Isolation Valves (Panel 11F).

3.2 Log each operation of the MSIV and the differential pressure across the valves when opened in the CRO Log.

# SUPPORT PROCEDURE 52

OPENING IC TUBE SIDE VENTS TO VENT THE RPV

1.0 PREREQUISITES

Venting the RPV using the Isolation Condenser Tube Side Vents has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

When directed by the GOS/GSS, perform the following,

2.1 Verify the following:

1. Isolation Condensers are not required to be isolated. _____

2. Main Condenser is intact. _____

2.2 Confirm that the Isolation Condenser Vent valve control switches for the Isolation Condenser to be used are in normal mid-position (Panel 11F).

| | | |
|---|---|---|
| Isolation Condenser A | V-14-5 | _____ |
| | V-14-20 | |
| Isolation Condenser B | V-14-1 | _____ |
| | V-14-19 | |

2.3 Open the EOP BYPASS PLUGS panel inside of Panel 10XF.

2.3.1 Remove the bypass plug from position BP2 and insert it into position BP1. _____

2.3.2 Remove the bypass plug from position BP4 and insert it into position BP3. _____

3.0 PROCEDURE

When directed by the GOS/GSS, perform the following:

3.1 Verify that RPV Water Level is less than 180 in TAF.

3.2 Confirm open the Isolation Condenser Steam Inlet Valves (1F/2F) for the Isolation Condenser to be used.

| | | |
|---|---|---|
| Isolation Condenser A | V-14-30 | _____ |
| | V-14-31 | _____ |
| Isolation Condenser B | V-14-32 | _____ |
| | V-14-33 | _____ |

3.3 Open the Isolation Condenser tube side vents (Panel 11F) for the Isolation Condenser to be used.

| | | |
|---|---|---|
| Isolation Condenser A | V-14-5 | _____ |
| | V-14-20 | |
| Isolation Condenser B | V-14-1 | _____ |
| | V-14-19 | |

| GPU NUCLEAR | OYSTER CREEK NUCLEAR GENERATING STATION PROCEDURE | Number EMG-3200.11 |
|---|---|---|
| Title **SECONDARY CONTAINMENT CONTROL** | | Revision No. **10** |
| Applicability/Scope **EMERGENCY OPERATING PROCEDURE FOR OYSTER CREEK** | | Responsible Office **SYSTEMS ENGINEERING (EIC) E150** |
| This document is within QA plan scope _X_ Yes ___ No<br>Safety Reviews Required _X_ Yes ___ No | | Effective Date (04/25/00) 05/05/00 |

Prior Revision 9 incorporated the following Temporary Changes:

N/A

This Revision 10 incorporates the following Temporary Changes:

N/A

**LIST OF PAGES** (all pgs. rev'd to Rev. 10)

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E2-1 to E2-2
E3-1

| | Signature | Concurring Organization Element | Date |
|---|---|---|---|
| Originator | | EOP COORDINATOR | 3/28/00 |
| Concurred By | | EOP COMMITTEE | 4/4/00 |
| | | MANAGER SYSTEMS ENGINEERING (EIC) | 4/4/00 |
| | | PLANT OPERATIONS DIRECTOR | 4-13-00 |
| Approved By | | VICE PRESIDENT & DIRECTOR, OC | 4-24-00 |



OYSTER CREEK
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DOCUMENT SERIAL NUMBER 72
IRMC

1.0 PURPOSE

The purpose of the Secondary Containment Control Procedure is to:

- Protect equipment in the Secondary Containment.
- Limit the radioactivity release to the Secondary Containment.
- Maintain Secondary Containment integrity or limit the release from the Secondary Containment.

2.0 REFERENCES

2.1 Procedures

- 107.4, EOP Program Control
- 329, Rx Bldg. Heating and Ventilation System
- 330, Standby Gas Treatment System

2.2 Drawings

- BR 3017, 460 VAC MCC Elem Diagram Sht 4
- GE 112C2654, Sht 3, Panel 2R Connection Diagram
- GE 706E841, Vent & Effluent Rad Monitor Elem Diagram
- GU 3D-822-17-1002, Elem Diagram - Standby Gas Treatment System
- SN 15361.03-EC-23, Area Rad Monitoring Elem Diagram

2.3 2000-GLN-3200.01, OC Plant Specific Technical Guidelines

2.4 2000-STD-1218.04, EOP Writer's Guide

3.0 PRECAUTIONS AND LIMITATIONS

3.1 This procedure gives guidance to the operator for bypassing isolation signals which is a departure from the Oyster Creek Technical Specifications. It is permissible to take actions which depart from the plant's Technical Specifications during emergency conditions as authorized by 10 CFR 50.54(x).

4.0 ATTACHMENTS

4.1 Attachment A - Secondary Containment and Radioactivity Release Control EOP Flowchart
DWG: GU 3E-200-08-011 Sht 1

4.2 Attachment B - Support Procedure 49, Confirmation of Secondary Containment Initiations and Isolations

4.3 Attachment C - Support Procedure 50, Reactor Building Ventilation Restart

ATTACHMENT A

Attachment A to EMG-3200.11, Secondary Containment Control, is the Secondary Containment and Radioactivity Release Control EOP Flowchart, DWG: GU 3E-200-08-011 Sht 1 Rev. 4.

# SUPPORT PROCEDURE 49

CONFIRMATION OF SECONDARY CONTAINMENT INITIATIONS AND ISOLATIONS

1.0 PREREQUISITES

Confirmation of the isolation of Reactor Building Ventilation and initiation of SGTS has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

Confirm the following:

3.1 Both SGTS fans, EF 1-8 and EF 1-9, start (Panel 11R). _____

3.2 The following Reactor Building Main Supply Header Valves close (Panel 11R).

V-28-1/V-28-2 _____

V-28-3/V-28-4 _____

V-28-5/V-28-6 _____

V-28-7/V-28-8 _____

V-28-9/V-28-10 _____

V-28-11/V-28-12 _____

V-28-13/V-28-14 _____

V-28-15/V-28-16 _____

V-28-36/V-28-37 _____

V-28-38/V-28-39 _____

3.3 Reactor Building Containment Isolation Valves Close (Panel 11R)

V-28-21 _____

V-28-22 _____

3.4 Reactor Building Supply Fans trip (Panel 11R)

SF 1-12 _____

SF 1-13 _____

SF 1-14 _____

3.5 Operating Reactor Building Exhaust Fan trips (Panel 11R)

EF 1-5 or, _____

EF 1-6 _____

3.6 Drywell Ventilation Supply Valves Close (Panel 11R)

V-28-42 _____

V-28-43 _____

3.7 WHEN proper flow is established in the selected SGTS Train,

THEN Confirm the following:

1. SGTS Crosstie V-28-48 closes (Panel 11R). _____
2. The non-selected SGTS Fan trips (Panel 11R). _____
3. The non-selected SGTS Train inlet and discharge valves close (Panel 11R). _____
4. The running SGTS Train orifice valve closes (Panel 11R). _____

# SUPPORT PROCEDURE 50

REACTOR BUILDING VENTILATION RESTART

1.0 PREREQUISITES

The restart of Reactor Building Ventilation has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

When directed by the GOS/GSS, perform the following:

2.1 Verify that the Reactor Building Ventilation Effluent Monitors (REACTOR BUILDING VENT MANIFOLD NO. 1 AND NO.2) are reading less than 9 mREM/hr (Panel 2R). _____

2.2 Open the EOP BYPASS PLUGS panel in the rear of Panel 11R.

2.2.1 Remove the bypass plug from Position BP4. _____

2.2.2 Insert the bypass plug into Position BP1. _____

3.0 PROCEDURE

When directed by the GOS/GSS, perform the following:

3.1 Open the EXH. VALVES TO MAIN EXHAUST V-28-21 and V-28-22 (Panel 11R). _____

3.2 Reset the Reactor Building Ventilation System by depressing the RX BLDG. VENT ISOLATION RESET button (Panel 11R). _____

3.3

> CAUTION
>
> Steps 3.4 and 3.5 should be completed immediately after starting Exhaust Fan EF-1-5 in order to preclude damage to Ventilation System Ducts.

Start REACTOR BUILDING EXHAUST FAN EF 1-5 by placing its control switch in START (Panel 11R). _____

3.4 Confirm control switch for MAIN SUPPLY HEADER VALVES TO DW V-28-42 and V-28-43 in CLOSE (Panel 11R). _____

3.5 Select and start two of the following Reactor Bldg Supply Fans, SF 1-12, SF 1-13, and SF 1-14, by placing their control switches in ON (Panel 11R). _____